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by FRANK ENLING

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JAY P. CLEVELAND
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Serving Aviation 20 Years
JULY 1948 VOL. XXXIX—No 1

CONGRESSIONAL DEBATE on the 70-Group Air Force provides a blueprint of our 1950 aerial strength, which industry observers believe will look something like this: 15 Heavy Bomber Groups (410 planes) of Boeing B-29, Boeing B-50, Convair B-36A and, perhaps, Northrop *Flying Wing* bombers; 6 Medium Bomber Groups (184 planes) of North American B-45; one Tanker Group (36 planes) for mid-air refueling of converted Boeing B-29 and, perhaps, Convair B-36A; 2 Very Long Range Weather Groups (72 planes); 2 Very Long Range Photo Groups (72 planes) of B-45; 4 Tactical Reconnaissance Groups (216 planes) of North American P-82; 5 Medium Cargo Groups (288 planes) of Fairchild Packet and 4 Heavy Cargo Groups (144 planes) of Douglas, Boeing and Lockheed transports. Throughout the program the Air Force will award orders only for those airplanes which are either already in production or have been successfully test flown and procurement authorized by the Air Materiel Command at Wright Field. This immediate program, therefore, eliminates many of the promising new jet fighters and bombers but the essential factor of speed

This is the *Aquaflight* W6 amphibian, powered by two Lycoming 0-209A engines of 125 hp. Performance is good and price is said to be unusually low for such a plane

Republic F-12 or, perhaps, Hughes F-11; one Very Long Range Mapping Group (36 planes); 22 Day Fighter Groups (1650 planes) of Lockheed P-80, Republic P-84, North American P-82 and North American P-86; 3 All-Weather Fighter Groups (108 planes) of Curtiss P-87; 5 Light Bomber Groups (240 planes) of North American

The *Hoppicopter* (in flight below) has sprouted legs since the original model was designed

in production to provide the 70-Group force as quickly as possible makes procurement of untried new types impractical.

PORTIONS OF THIS program have already been allocated particularly in the bomber and fighter field, and the recent orders for the Northrop C-125 Raider, Lockheed C-121 Constellation and the new Douglas C-124 are indicative of the cargo content of the new Air Force. This latter is an improved version of the giant C-74 Globemaster but with larger engines, strengthened wings, redesigned cockpit and greater load and speed capacities. This $19,000,000 order also includes modernization of the 14 C-74's now in service. These new craft are known as "strategic transports" to match with the strategic bombers they will supply.

A BOMBSHELL OF major importance was dropped during the debate in Washington with the revelation that mid-air refueling was now a fundamental part of the Air Force's strategic bombardment plans, thereby setting at rest recurrent alarm over the inability of U.S. craft to reach Russian production and military centers. More than mere planning, Air Force has reopened the wartime Boeing-Wichita (Kans.) plant for the modification of Boeing B-29 bombers as "Flying Tankers" and combat *Superforts* to receive fuel in mid-air. This is the way the system works: two B-29's take off (one loaded with bombs, the other with fuel) and fly towards the objective about 2000 miles. At this point (in the vicinity of the North Pole) fuel is transferred from the tanker to the bomber. The tanker then returns 2000 miles to its base —a roundtrip of 4000 miles (standard B-29 range) and the bomber flies on 4000 miles over the target. Answering the question of

(*Turn to page 57*)

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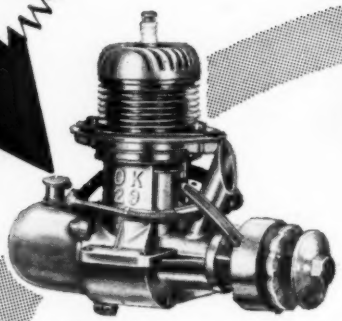
"O.K." Consistent Winners



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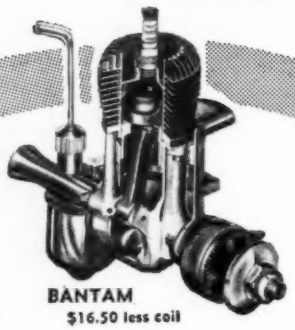

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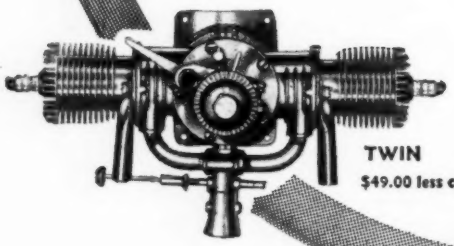

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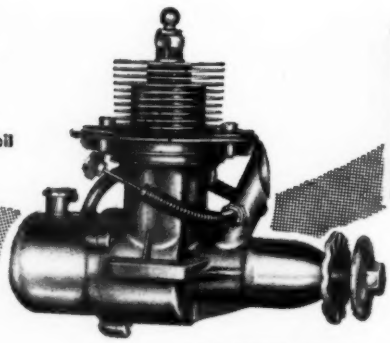

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record after record

SOME RECENT "O.K." WINNERS

FREE FLIGHT GAS—RISE OFF WATER
Class A, Open record time of 3:13.0 (3 flight average) established by Paul Salaka, Hampton, Va. on December 8, 1947 with a Bantam.

CONTROL LINE SPEED GAS MODELS
Class A, Senior record speed of 107.48 mph established by Maurice Stenglin, Dallas, Texas on February 10, 1948 with a Bantam.

COMPRESSED GAS (CO_2) MODELS
Combined class, Open record time of 14 min., 54 sec. (3 flight total) established by Joe Dodson, Hampton, Va. on March 4, 1948 with an "O.K." CO_2

CONTROL LINE SPEED GAS MODELS
Class A, Open record speed of 97.47 mph established by John Kasserman, Knoxville, Tenn. on March 9, 1948 with a Bantam.

And these are just a few recent winners announced by the AMA Contest Board . . . authentic proof that "O.K." consistently powers the champions. Watch this column in future issues for the latest records set by "O.K."powered models. So if you want championship performance,you're on your way when you say "O.K."

"O.K." ENGINES

SCRAP BOX

By BILL WINTER

WELL, men, things have been happening so let's get with it. Val Luce, technical double dome of the AMA headquarters, advises us of a proposed point system for selecting National champs. Previously a lot of people were unhappy because a good indoor builder invariably took top honors. Indoors pays off on skill, but outdoors is affected largely by dumb luck, and it is virtually impossible for a non-indoor man to offset what goes on behind closed doors and windows where the "mike" jobs pile up the points. The old system as you know simply gave points according to places won, but the proposed new system recognizes the obvious fact that a real champion should be able to clean up across the board.

To begin with, bonus points would be awarded for competing in more than one type event. Events might be broken down into all indoors (except gliders) and Outdoor Experimental, all glider (indoor and outdoor), outdoor rubber and CO2, free flight gas, control line speed (gas and jet). The absence of stunt is explained by the fact that points would be given only for events that are recognized for national records. (Offhand, we think the acrobatic boys would be mighty unhappy not to receive points for a win in stunt.) For entering and making a flight in all of these categories, the contestant would get 50 points; in four groups, 30 points; in three groups, 15 points; two groups 5 points; one group, a big ole goose egg.

In addition, of course, credit would be given for places won, but only the best performance in each category would be accepted. Here too a unique point system is proposed. 100 points would be given for first. 70 for a second, 50 for third, and 40, 32, 25, 13, 8, 4 and 2 for places down to 10th. To avoid extra bookkeeping it has been proposed that each contestant be given a slip or card to fill out and submit at the end of the contest.

Now if all this sounds wild and woolly, you'll be surprised to know that the system has been used and developed over the past two years by the Los Angeles Aero Modelers. We understand the germ of the idea traces back to Frank Greene. Seems that the L.A.A.M. wanted to set up an individual championship title for their inter-wing contests but felt that existing systems left too much to be desired. To keep a winner from piling up the points in one category, the contestant was limited to his best effort in one category and given additional bonus points for his versatility in competing in dissimilar events. This tended to separate the all-round expert from the specialist.

At first the LA Aero Modelers used 136, 86, 53, 33, 20, 13, 8, 5, 3, 2 for places from one to ten. This curve, while far superior to a straight line, involved too many odd numbers. The curve mentioned by Luce above includes such considerations (according to Greene) as the curve of probabilities, merit of effort, and average times posted by the winners. This system apparently has been tested under fire and is the end product of considerable worrying and thinking. At their quarterly meeting in Fresno, the California Association of Model Clubs, endorsed the system and suggested submission to the AMA Contest Board.

(*Continued on page* 12)

THE Mohawk Chief

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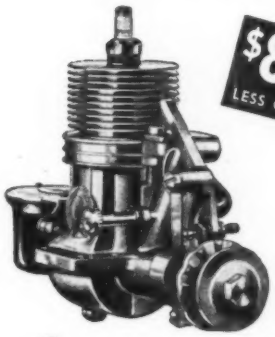

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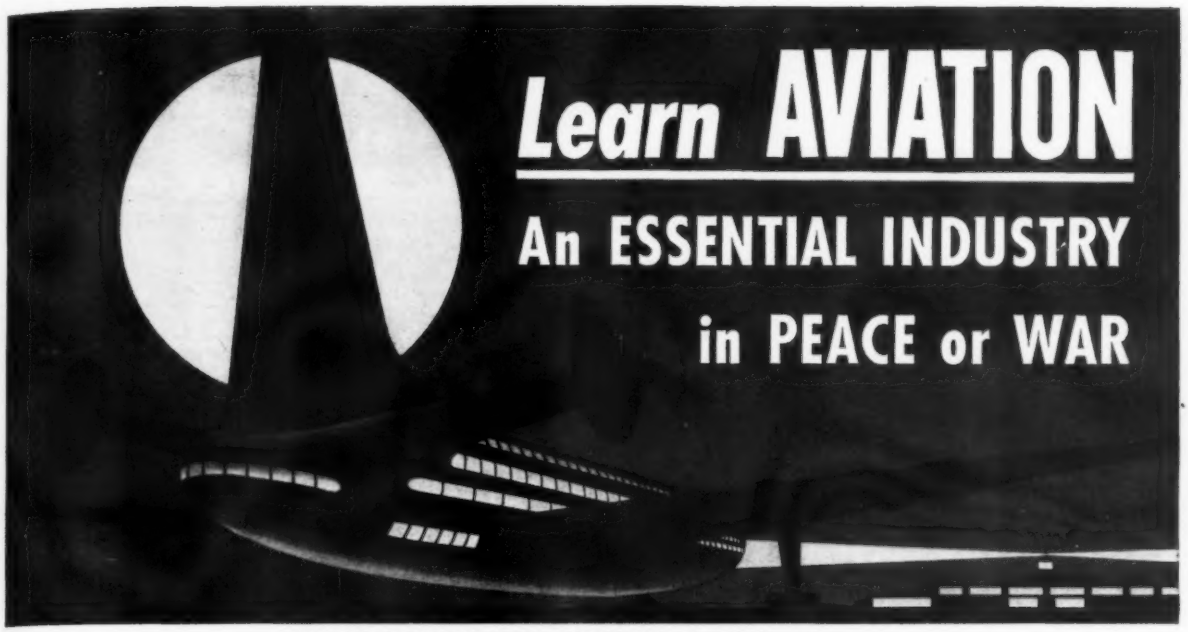

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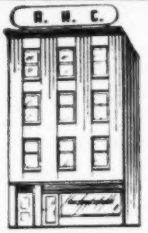

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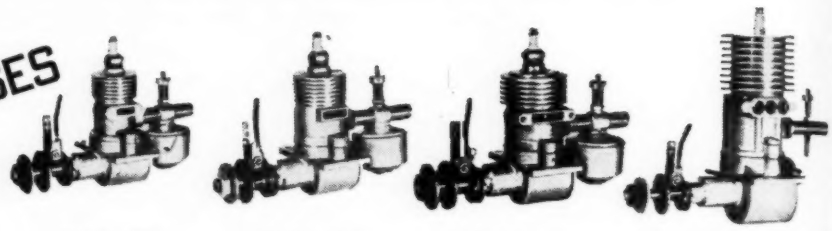

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Bore	.66	.812	.880	1.00
Stroke	.562	.562	.562	.777
Horsepower	1/7	1/6	1/5	1/4
RPM	7,500	8,000	8,500	9,000
Propeller	8"	10"	11"	12"
Weight (ozs.)	4	4½	4½	9

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AMERICA'S GAS MODEL HEADQUARTERS

REPORT FROM THE WEST

by "Tip" Hannon

THE purpose of this department is to broadcast to model airplane builders everywhere the activities of model enthusiasts in the eleven western states. The greater part of activity in this region takes place in the three West Coast states, especially the southern regions which have the advantage of all-year flying weather.

In these columns we do not intend to confine ourselves to announcements of local meets and winners—these appear in our "Club News" department. This department is a forum for discussion by Westerners of problems concerning the various phases of our hobby. (We welcome your suggestions and contributions which should be sent to: "Tip" Hannon, 5429 Crenshaw Blvd., Los Angeles 43, Calif.)

* * *

For this month's article we asked old-timer "Joe" Weathers to put forth a few ideas from his bailiwick. And Joe came up with the following discussion which we are sure you will find very interesting, even though somewhat controversial.

By E. J. (Joe) Weathers

A comment once made by my good friend Pete Bowers, able designer of the San Francisco area, has always seemed to hit the nail on the head relative to the comments that follow. He once said that a new builder is a strict novice the first day he flies his very first ship and an expert the following day, due to having been the lucky catcher of a thermal in a major meet. So true.

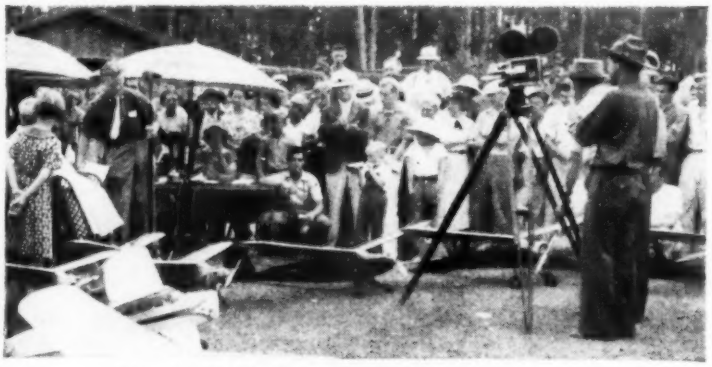
With due respect to all my friends elsewhere, most of the "radical" ideas in promoting the model airplane hobby were first tried here on the West Coast, especially in the Southern California area which is now generally acknowledged to be the proving ground of the nation, due in part to the year 'round flying available here.

Among such ideas is the Precision Type Gas Model Contest. True, these meets have been frowned upon for the last 10 years by most of our own local contest directors—who will simply have to be shown by actual practice that both here and elsewhere the Precision Meet will be back—refinement of the hobby is forcing it day by day. This type of competition, held here in 1935 through 1939, was outstanding.

Our national "Sporting" rules, if plotted on a graph, would show the blind alleys we find ourselves heading into year after year. One might say, caught like "rats in a trap" trying to dodge the errors of these rules as they prove their impracticalities along the way. So, under the present system, as each new year rolls around new experimental rules are tried, making continual guinea pigs out of the modeller—not to speak of the thousands of dollars lost outright by engine manufacturers in the past who tried to keep up with the displacement variations.

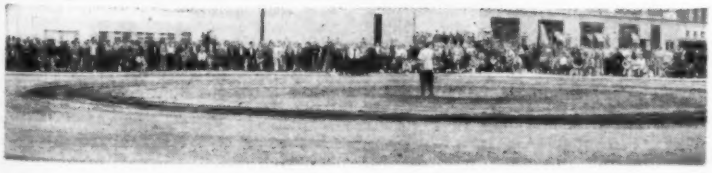
To be specific, merely note over the years how, in sequence, wing loadings have increased (very slowly), engine runs decreased, power loadings have been introduced and subsequently increased, official flights limited to 10 minutes (making parachutes, or "dethermalizers" as some prefer, almost mandatory)—and now no wing loading at all. These rules apply of course to free flight gas.

What is the point? Simply this. Is *duration* proving anything to advance the hobby? Not in these times! It is now well known that anything resembling a model

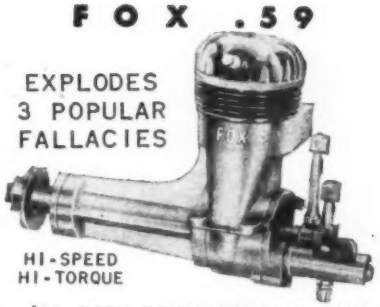


Ships of realistic design and craftsmanship are assembled for final judging at Santa Barbara Precision Contest in July 1937

Student flying exhibition at Northrop Aeronautical Institute, Hawthorne, Calif. Left to right, Benny Brady, participant, Kenneth Wood, Asst. Student Director of Northrop School, H. C. Orwick, manufacturer of Orwick engines, and J. C. Yates, participant. Below Benny Brady entertains on flight circle with a "madman" stunt before Northrop student body



FOX .59



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The MAGICIAN gives you HIGH SPEED IN THE AIR—yet glides in to a 12 m.p.h. feather landing.

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give you maximum utilization of your power. Use a Snafu "75" Blue-tip with your Sportsman, Torpedo, or similar h-p engine.

Snafu "75" 10" diameter, 4-6-8-10-12 pitches 60c ea.
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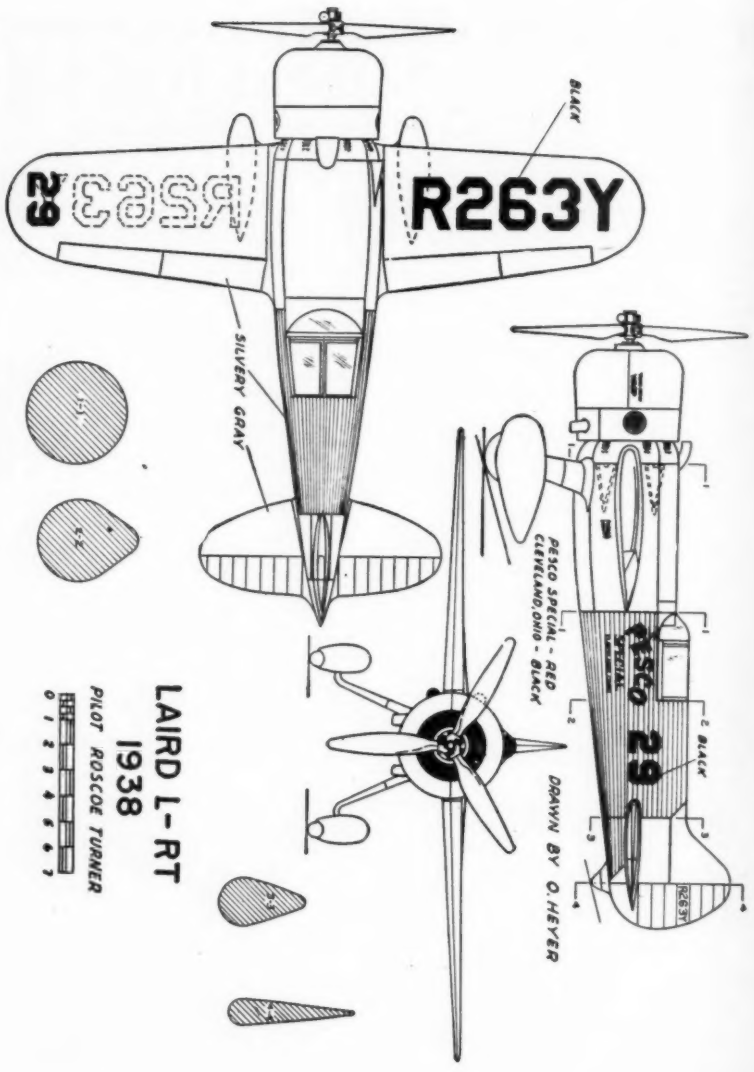

will leave for distant parts on a thermal if flown in a big championship meet at exactly 11:14 a.m. Besides, it's sure to look like a flying giraffe.

While duration will probably always be the main competitive factor in flying model gliders and rubber powered ships (with the exception of rubber powered flying scale), such should not be the case in future competition of gas (or diesel) powered free flight models, if the art is to progress. The durational type gas model contests can still be available for establishing records, if anyone is interested—but the Precision competition should definitely get preference. When this happens the sport will begin to blossom, but good. Such a type of competition will force, and naturally develop, hundreds of new original designs (now sadly lacking) with new experimental ideas actually worked out to the flying stage, with better workmanship throughout, and with duration in the air of no importance.

Precision meets can have their judging procedures streamlined to the point where entrants can be handled at meets in the same numbers as present duration meets.

A Precision Contest is generally conducted on a simple point system, and in spite of your entry being at the mercy of a group of human beings, you can bet your last drop of cement that the boys who come with the goods will go home that way, too.

Engine run times should be left up to the entrant, according to what he feels is necessary to best demonstrate the model's flying ability to the judges and still land in the designated flying area with, of course, a good close-observation landing for maximum points in this phase of scoring. Wing loadings on the heavy side are a decided advantage, especially if your turn to fly comes after a breeze has arisen—usually not a welcome situation, but an evil that must be tolerated anywhere.

Obviously, the typical present breed of duration gas "model" which has dumped the hobby in the present rut would not have much of a chance here. But that is no reason why the kit manufacturers should suffer. They can easily create for the new competition, and their resultant products can and would be flown right along with the original designs. However, the builder who shows initiative by designing his own ship and winning out over a proven kit design by professional designers should get extra credit for this effort. His own creation may well be lacking on other point gathering items such as construction details, and hence a kit job might easily win from this angle. Both should balance out, with plenty of room for everyone.

The following shows a suggested breakdown for the scoring system. This of course is subject to further and final revision. Distinction of type, either original or kit, should be required on entry blank.

1) Design ..... 15 Points (Maximum)
2) Construction (Including consideration for retractable landing gear, etc.) ..... 15 Points (Maximum)
3) Finish ..... 15 Points (Maximum)
4) Take-Off ..... 15 Points (Maximum)
5) Flight ..... 25 Points (Maximum)
6) Landing ..... 15 Points (Maximum)

TOTAL 100 Points Maximum

To properly acquire maximum points under the take-off category, each model must of course R.O.G., unassisted, which automatically creates much more realistic models than are generally flown today. (Another event entirely might well be set up for strictly Flying Scale Gas Models, a type of ship once popular in the early California Precision Meets and more recently developed to a high degree in U-Control competition.) In Precision competition, two official flights are usually required to demonstrate properly to the judges the model's flying consistency, in which case the above point system should be so split as to accumulate the 100 points maximum only after two official flights. Weight lifting is also another type of special event which can be run in with the main competition.

Competitive flying of this type should definitely have Junior and Senior divisions, set apart by the usual method of age of the entrant, in order that young builders are not competing against older ones. Sixteen might be a good break point for dividing Juniors and Seniors.

Last, but not least, is the spectator angle. Your scribe and others well know that the admission-paying spectator is the potential new builder of tomorrow (or that same day, if the hobby shop in his neighborhood is still open after the meet).

Have you ever studied these people at a contest? We have here, both at the Precision and stagnant duration contests. The time-in-the-air models get to be "the same old stuff"—after the onlooker has seen two or three flights, especially when they shoot off the ground and disappear overhead before the poor guy could even note the color. Now, in the much more scientific competition under discussion, spectator interest remains high throughout the gathering—he can walk around and study each and every model in the pits, and can actually watch a complete official performance of the craft, even to the landing, which latter item is incidentally the most interesting point of a flight to the average layman viewing a meet for the first time.

The usual confusion and bickering for a timer is out of the picture, with this situation replaced with a well-rehearsed group of prominent judges and a couple of starters. There is no time lost classifying the various size models as under the present setup. A 3 ft. span ship might well win over an 8 ft. job in the neighboring pit.

Speaking of judges, I wish to elaborate on that a bit by saying that it is a known fact here that men prominent in aviation in this area have many times expressed their interest in these Precision Competitions, as proved in the past when their services were actually made use of. It must be said, however, that they are flatly cold to anything along the lines of the present deal. The reason is obvious—they want and expect to see developments in miniature aircraft design to follow the same paths as large aircraft.

So there it is, Mr. Gas Model enthusiast, what shall we do to get the ball rolling? If you are sufficiently interested in these arguments against the present arrangement, send a letter to Mr. C. O. Wright, new head of the Academy of Model Aeronautics, in Washington, D. C. The writer was privileged to mention the scanty outline of this text to Mr. Wright during his recent visit to Los Angeles, and he was receptive to it. Let MODEL AIRPLANE NEWS know of your backing along these lines, too. We have already run into concrete evidence that prominent aircraft manufacturers and airlines in this area will gladly play ball as to competition awards when it appears to them that the contestants in such a Precision Competition may be the men they will be seeking tomorrow to carry on full size aircraft development. How about it?

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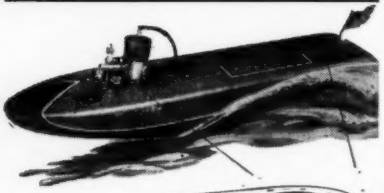

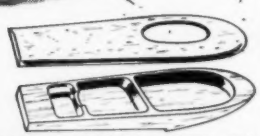

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(*Continued from page 3*)

AMA Pres. C. O. Wright, who attended the meeting, is said to have heartily approved the idea and Luce mentioned that Walt Good, who heads up the Board, found nothing wrong with the proposal.

* *

You will recall that when the glo-plug made its sensational debut we commented that new model developments like this did not knock out the old way of doing things, but in the long haul the old and the new usually sought their own level and then went on side by side. This seems to be happening with glo-ignition. In the beginning some ignition accessory manufacturers found that their business dwindled to 10%, but volume is coming back now to about 50% and is still climbing. We have learned the good and bad points of glo-ignition.

One big headache arises from the fact that many engines are being run at higher rpm than they were designed for. The tremendous disparity in crankshaft speeds between some of the old and the new hot control line motors poses a genuine problem for fuels manufacturers. You can't throttle down the glo-plug which so far limits its usefulness in free flight. Home concocters of fuels don't understand the basic fuels-glo-ignition setup. And so on. On the credit side, builders like Storey, Newberger and Sharp have proved what you can get out of glo-ignition. Mathews set that mark of 150 plus with a glo-plugged *Hornet*.

Keith Storey, 'tis said, was a diehard ignition man who took three trials to convince himself that he could fly faster without conventional ignition. Each time he jumped 8 mph on his "29" and 5 mph on his "49," with batteries and coil still in place. Smaller, lighter models made possible by elimination of the deadweight parts Storey lugged around on his tests would mean higher speeds again. So far, then, the glo-plug is most revolutionary in speed. It has advantages in stunt, too, such as increased maneuverability due to lower wing loadings; but our particular correspondents in the field of stunt seem about evenly divided. We did note that in smaller, scale type models where weight can be an awkward problem glo-ignition turned overweight mediocre models into successful fliers. Some of the westerners are fooling around with glo-ignition on r.o.w. where the elimination of plug ignition is a step in the direction of true waterproof flying. Only the future will tell the ultimate destiny of glo-ignition. We do know that Ray Arden is coming up with some new inventions that should get the glo-plug around some of these early problems. But he won't talk . . . yet.

* *

From England comes this true tall story that tops anything heard so far. H. J. Watkins, press secretary of the Cardiff Model Aero Club, mounts the soap box:

"I just have to tell you the tallest true modelling story I know of," begins Watkins (better close the glue bottle, boys, this one is worth it!). "And it happened to a club member during the beginning of the war. As you may know, the Civil Service Staffs in London were scattered about the country so that they could not be wiped out at one blow . . . so a certain laddie was moved to Cardiff and had little to occupy his time . . . what better than aeromodelling then? He started with a *Flying Minutes*, a streamlined high performance Wakefield type. He made a smashing job of it but could not trim it. That is when he joined the Cardiff Model Aero Club.

"With our help he got his *Flying Minutes* up to an average of 1 to 2 minutes. Then one day while I was timing her she hooked a thermal and stayed in sight for 13½ min. . . . the boys pursued it but it got away. The next day a phone call from the local police at a village six miles outside Cardiff asked him to look them up inasmuch as they had a model belonging to him. The constable said there was little damage to the model which was locked up in a shed, and then told him the following:

(*Turn to page 56*)

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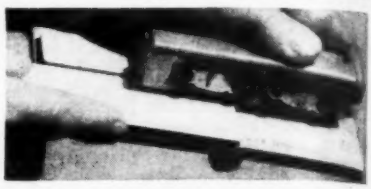

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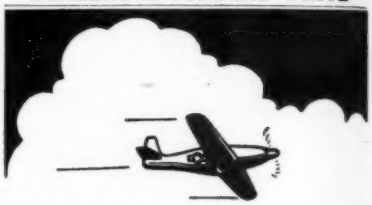

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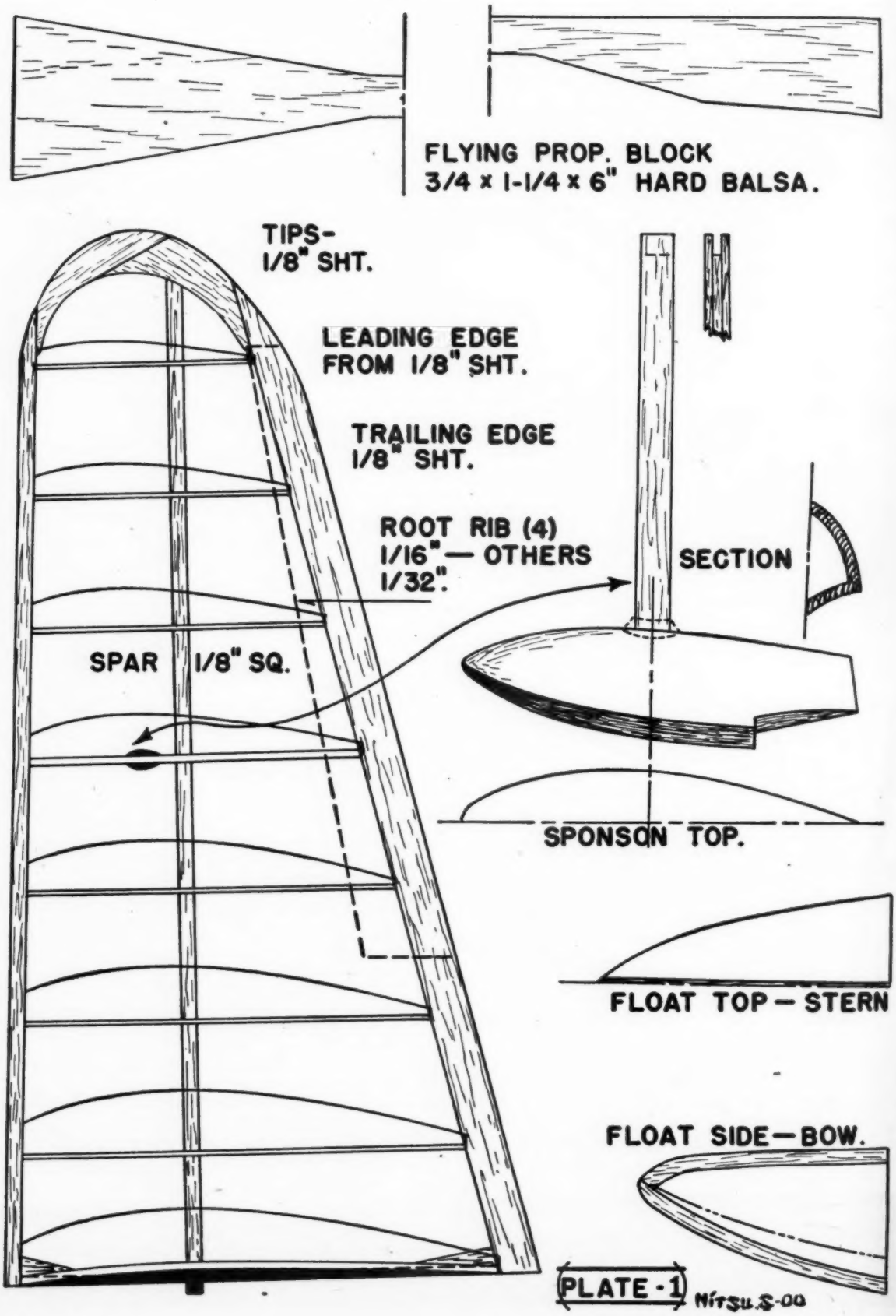
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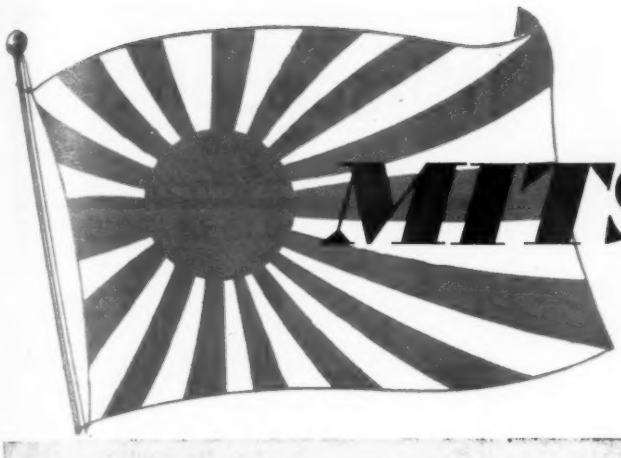
1/16" — OTHERS
1/32".
SPAR 1/8" SQ.
SECTION
SPONSON TOP.
FLOAT TOP — STERN
FLOAT SIDE — BOW.
PLATE - 1
Mitsu.S-00



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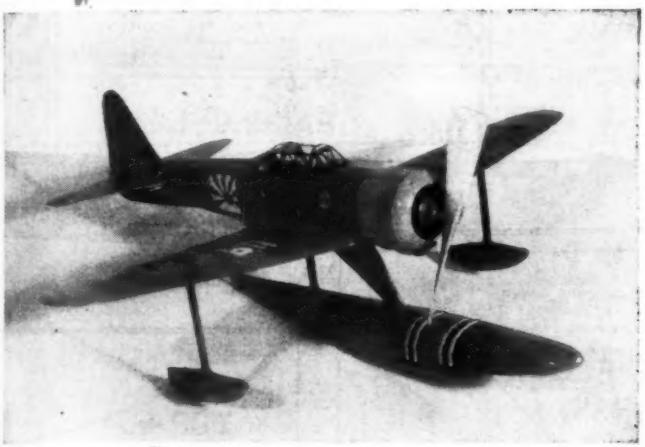


by Joseph H. Wherry

THE NOTORIOUS "FLOAT ZERO" IS ACCURATELY MODELLED HERE— IT'S BOTH AN INTERESTING SHIP AND A GOOD FLIER

ONE of the very few expressly designed-for-the-purpose float fighters of World War II was this Japanese aircraft which made itself somewhat of a nuisance during the first two years of Pacific warfare. Its speed was not far from the 300 mph mark; maneuverability was excellent; and its 2 and usually 4 guns made it a menace during the days when island airstrips were rare. Those were the days when the Nips had things pretty much their own way: Allied fighter opposition was weak, and this seaplane made fighter plane logistics a fairly simple matter indeed.

This little model is exceptionally rugged, and in spite of a total of 4 coats of dope (2 clear and 2 colored) it tips the scales ready to fly at a shade under 1½ oz. Moment arm factors and the general layout of the big ship make changes unnecessary other than lengthening the prop and lowering the floats. The latter concession to accurate scale was deemed wise in order to employ a prop of sufficient length.

Right now the author desires to insert a "note" to builders who may want to *alter* the accompanying design *to accurate scale* in *all* points. Only 3 alterations are necessary: (1) employ a *spinner* as shown on the plans (Plate 2); (2) build a 3-blade scale propeller as indicated; (3) shorten the main float struts so that the top of the float is exactly 1¼" below the bottom of the fuselage. Of course, shorten sponson struts, too.

If you have never tried a rubber powered scale model seaplane, by all means try this Mitsubishi fighter; flights are a thrill, and the extra work necessitated by the floats has been cut to a minimum through use of timesaving and weight-reducing float construction methods. The square tipped prop, now coming into vogue on full scale aircraft, was employed with excellent results, and this item is recommended as worthwhile. Such a prop provides powerful thrust even though it is shorter than is usually required on such a model.

FUSELAGE—Top and bottom keel pieces of 1/16" x 1/8" balsa are pinned in place over the plans. Note that an addition to the top keel must be used in order to carry out the contour just aft of the cockpit. Bulkheads 2 through 7 are cut (in halves) from 1/16" sheet. Cement left halves in place and add the side keel. Bulkhead 1 is cut from 1/8" sheet to the same pattern as No. 2. After thoroughly dry, this half-fuselage is removed from workbench and the remaining half-bulkheads and the other side keel is cemented in place. All stringers are 1/32" x 1/8" stock. Cement these in place, using care on bottoms of Nos. 3 and 4 bulkheads where the stringers actually form the base of the fairing that fillets into the wing root. The 2 root ribs (see side view, Plate 2) are now cut from 1/16" sheet and cemented in place. Cement the 2 small fairing pieces (see top view, Plates 2 & 3, where the plates join) of 1/32" sheet in place between wing roots and stringer.

Small bits of soft balsa scrap may be used to fair in the leading edge of the wing root. A small model-making blade is handy for carving these fairing pieces to correct shape after they are installed. Cement the elevator rests (1/16" x 1/8") in place along each side keel. Also the holder for rear motor hook dowel may

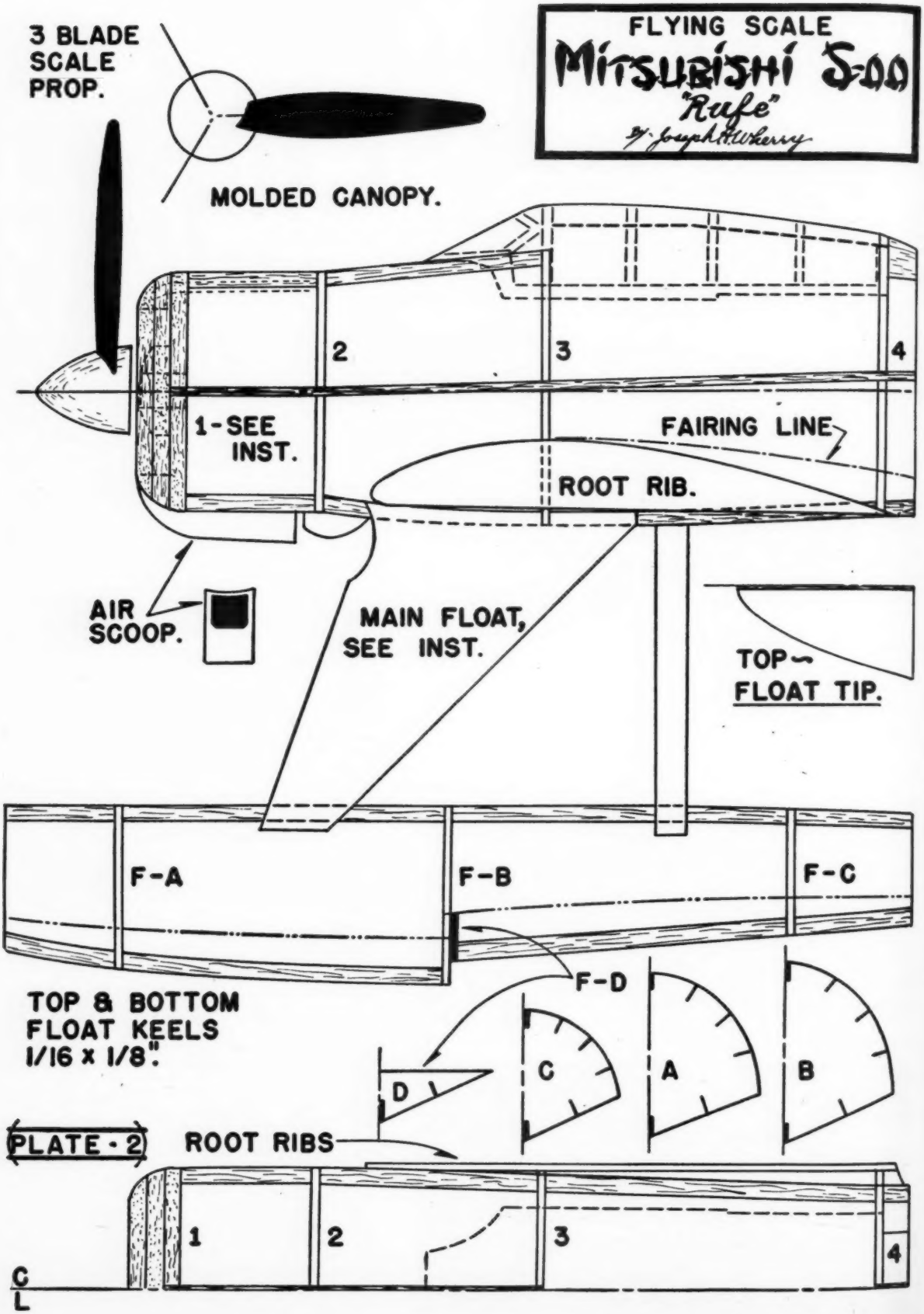
(*Turn to page* 38)

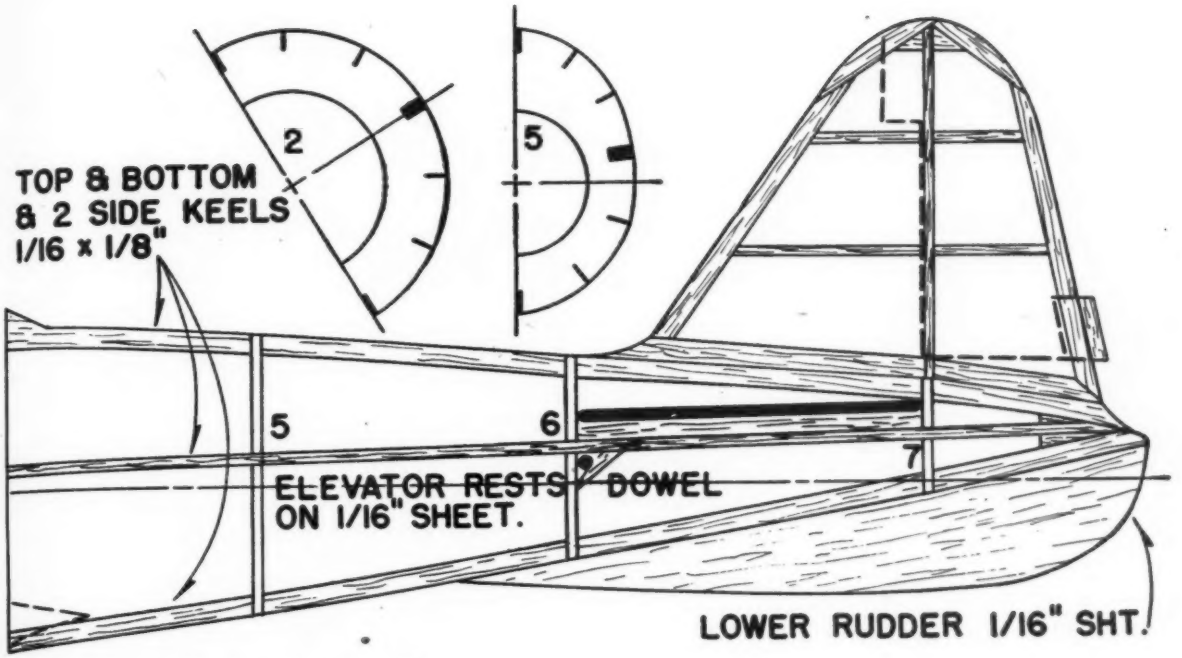
FLYING SCALE

MITSUBISHI J-00

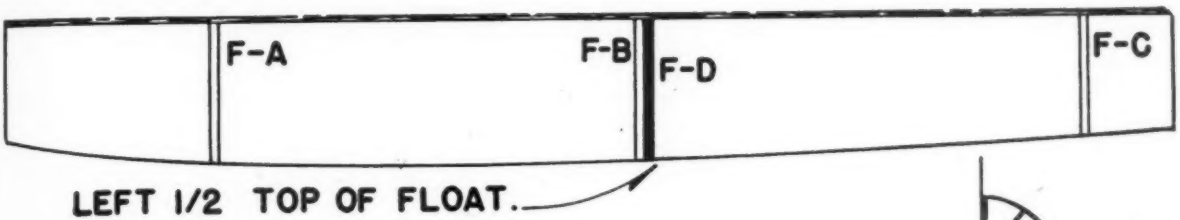
"Rufe"

By Joseph H. Wherry





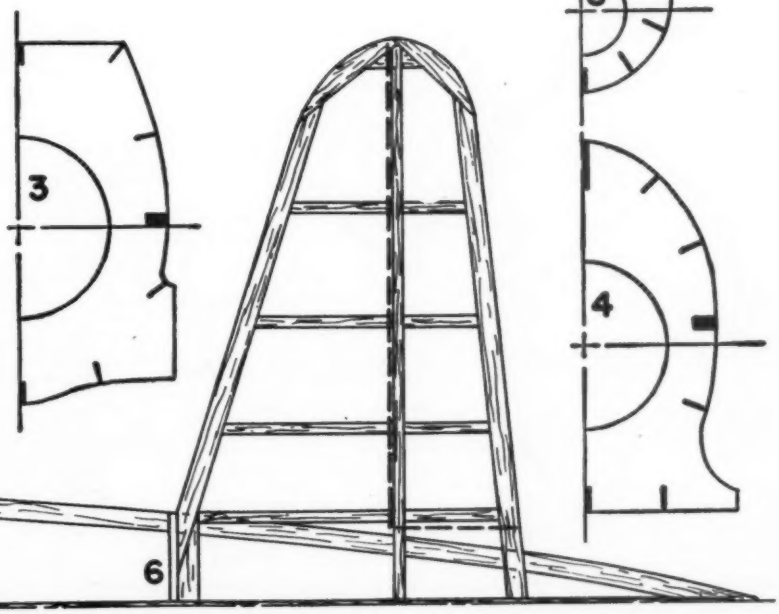
STRINGERS 1/32 x 1/8".



LEFT 1/2 TOP OF FLOAT.

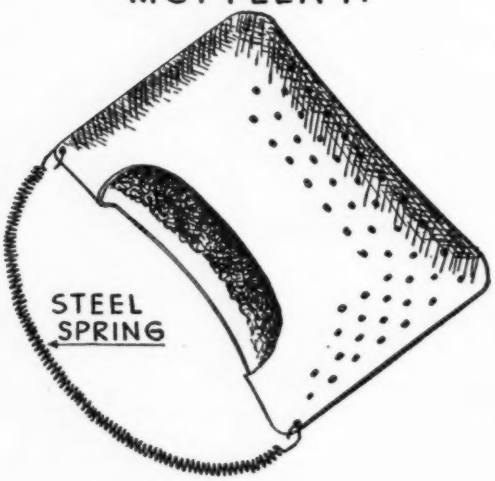
BULKHEADS
1/16" SHT.

PLATE - 3
MITSU-3-00

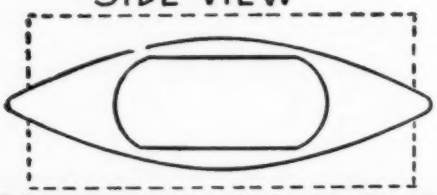


1/32" SHT. FAIRING.

MUFFLER "A"



SIDE VIEW



DOTTED LINES ARE ORIGINAL TUBE BEFORE SQEEZING.

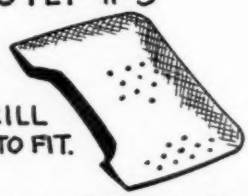
STEP # 1

1" TO 1½" ALUMINUM TUBING — .051 TO .081 WALL THICKNESS — 2" TO 3" LONG.

STEP #2

FLATTEN BOTH ENDS.

STEP # 3



USE ¼" DRILL AND FILE TO FIT.

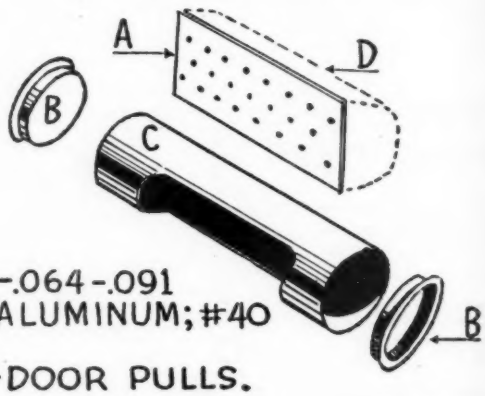
USE #40, #50 OR #60 DRILL FOR EXHAUST EXIT HOLES PACK WITH HEAVY STEEL WOOL.

MUFFLER "B"

FIT AROUND CYLINDER

USE #40; 50 OR 60 DRILL FOR EXHAUST HOLES.

EXPLODED VIEW



A—.064-.091 ALUMINUM; #40

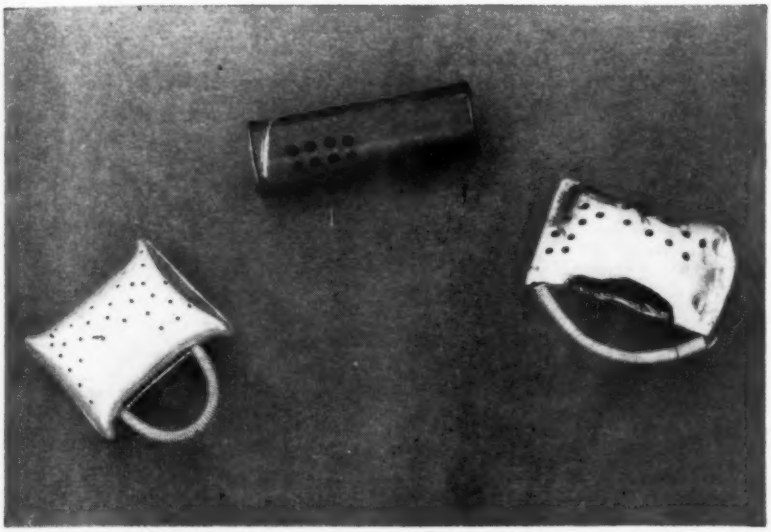
B—DOOR PULLS.

C—.051-.081 TUBING ¾" I. D.; 2¾" TO 4½" LONG

D—HEAVY STEEL WOOL; PACK BEHIND BAFFLE BEFORE PRESSING IN SECOND DOOR PULL.

Keep Your Motor QUIET!

by Johnny Davis and Phil Babcock



A group of homemade mufflers. Left and right are P.D. and Babcock units; center one is by Enright

"MUFFLERS! — Phooey! — I wouldn't get caught dead with one on my ship!" . . . "Power-loser!" . . . "Where'll I put it?" . . . "Dead weight!" . . . "What's the matter with people anyway; why can't they plug up their ears?"

The above, children, are famous last words. As of today the muffler, in spite of all the derogatory remarks, is here to stay. In fact, it is almost as necessary as the batteries you fly on or the fuel you use. We could even go so far as to say that, depending on location of course, you could have everything except a muffler and still not be able to fly.

Evidently we have needed a "silencer" for some time and just wouldn't pay attention. But boy, oh boy, when the various city and state fathers heard about mufflers, a world's record was made for unanimous, speedy legislation. To wit: No tickee—no washee; no muffler—no fly. Short and sweet, isn't it?

Actually, fellows, the muffler may be the saving grace for a swell hobby and sport that was fast running out of places to fly all over the country.

We can name lots of clubs that simply folded up due to lack of flying space, cancelled reservations on account of noise nuisance, etc. One well known example is the *Lockheed Club* whose members used to fly at Griffith Park Clubhouse in Los Angeles. Their flying field was one of the most popular in the Los Angeles area. We have seen as many as 30 or 40 ships at one meeting. These meetings were held at night on every other Wednesday, and the field was also open on Saturdays. The night flying was real fun for all, spectators and modelers alike, since some of the boys rigged up lights on their ships and really put on a show. The flying field was composed of 2 soft ball fields, that had common outfields and plenty of overhead lights. The field was as smooth as a billiard table, with grass about ¼ inch high. There just couldn't be a better place to fly.

Then one day the Park Director said, "No more flying—too many complaints." And that was that. If we had had mufflers at that time, a beautiful flying field would have been saved and the *Lockheed Club* might still have 60 to 70 members present at a single meeting. Actually, from the minute flying was curtailed, interest sagged badly and the club died a natural death. Don't look now, but this can happen to your club—if it hasn't already!

Mufflers will probably become standard equipment on your engines just as they are on your car. But until something like this happens, we had better use them if we wish to fly in congested areas or near any type of home and residential area.

Mufflers are a natural evolution for two cycle engines as well as the four cycle engine. Many cities and states have laws concerning mufflers on motorcycles and almost all states have highway laws calling for mufflers as standard equipment on automobiles, so we should have expected it sooner or later. Since it will probably be our lifesaver, let's meet the situation and accept it with good grace.

Granted! It does look awful sticking out out in the breeze! Granted! It does add weight in the wrong (or sometimes right!) places. Granted! It does take a little power off the top of your engine run if you don't have the right combination. Just the same, it keeps you flying! Don't ever lose sight of that fact and day by day your muffler will look better and better.

We propose to show you how to build two designs of mufflers, as simply as is humanly possible, and as efficient (we hope) as you will ever need it.

First, a little practical theory. You all know (or do we) that heated air or gases expand. Well, when the air and fuel inside the cylinder of your engine is ignited, the gases create tremendous pressure because of their expansion due to the heat of the combustion. This pressure drives the piston toward the bottom of the crankcase on its downward stroke. As the piston opens the exhaust port on its way down, the exhaust gases rush out the opening created, carrying with the sound waves created by the explosion in the firing chamber. These sound waves go straight out from the exhaust, and there's your real noise.

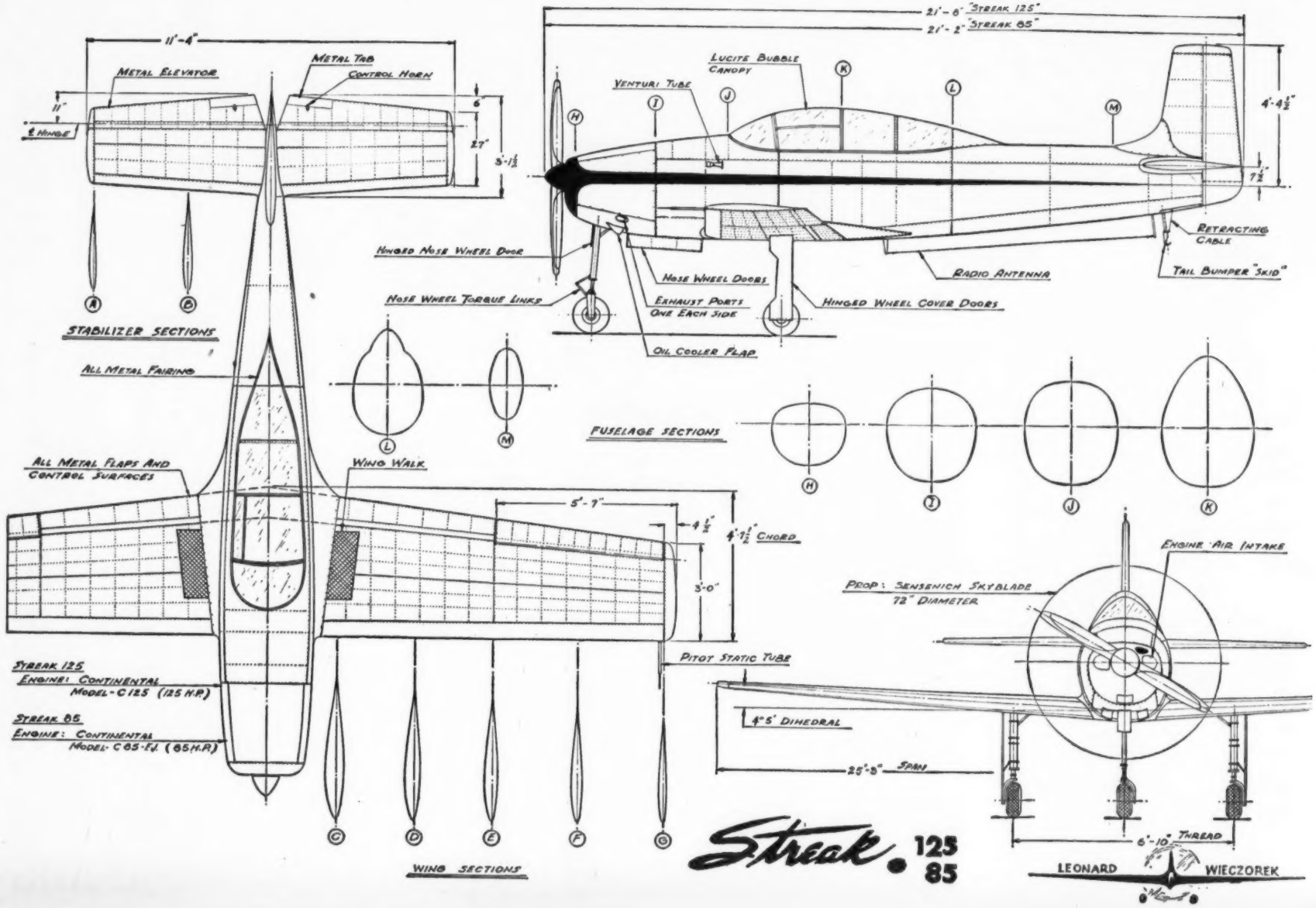
Now in order to control the sound waves, you must control the heated exhaust gases which are actually generating the sound waves. To control the heated gases you must have an expansion chamber of some sort that will be partially closed to outside air yet open to your exhaust port. However, as you are putting pressure into your expansion chamber, you must be able to release it quickly. The trick is to delay the gases long enough to allow them to cool slightly. The sound waves will then be delayed also, and when they are released will have lost their intensity.

Back pressure is the bugaboo of the muffler designer. It is a proven fact that a certain amount of back pressure will increase the efficiency of a two cycle engine. However, too much back pressure will make the engine run too hot in the firing chamber and may burn a hole in your piston, plus adding carbon. Determining the exact amount of back pressure for highest efficiency on a given engine is a very technical problem which we are not prepared to go into. For those who are interested, consult your nearest eminent two cycle motorcycle expert. Suffice it to say that if you have enough small exit holes to approximate seven-eighths of your total exhaust area you won't be far off, and your muffler will work all right if you have slightly less area or slightly more.

The size of your exit holes is more important than the number. The smaller the hole the smaller the sound that comes out of it. Therefore it is better to have a lot of little holes than it is to have a few big ones.

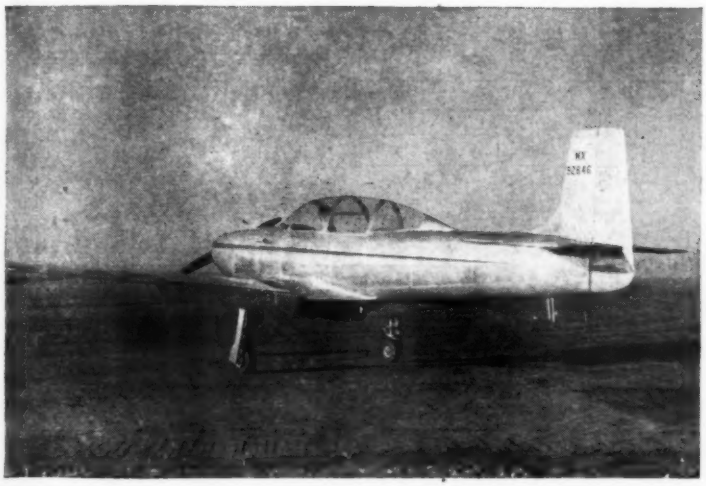
Placement of the exit holes is also important. They should never be exactly opposite the exhaust port where the sound can go straight through. Put them on the top and bottom of your muffler, near the front and rear. Let the sound mill around inside and it gets tired. Then when it

(*Turn to page* 50)


11'-4"
METAL ELEVATOR
METAL TAB
CONTROL HORN
11"
6"
27"
5'-1½"
HINGE
A
B
STABILIZER SECTIONS
21'-6" "STREAK 125"
21'-2" "STREAK 85"
LUCITE BUBBLE CANOPY
VENTURI TUBE
H
J
K
L
M
4'-4½"
7½"
HINGED NOSE WHEEL DOOR
NOSE WHEEL TORQUE LINKS
NOSE WHEEL DOORS
EXHAUST PORTS ONE EACH SIDE
OIL COOLER FLAP
HINGED WHEEL COVER DOORS
RADIO ANTENNA
RETRACTING CABLE
TAIL BUMPER "SKID"
ALL METAL FAIRING
L
M
FUSELAGE SECTIONS
H
J
K
ALL METAL FLAPS AND CONTROL SURFACES
WING WALK
5'-7"
4½"
4'-7½" CHORD
3'-0"
STREAK 125
ENGINE: CONTINENTAL
MODEL-C125 (125 H.P.)
STREAK 85
ENGINE: CONTINENTAL
MODEL-C85-FJ (85 H.P.)
G
D
E
F
G
WING SECTIONS
PITOT STATIC TUBE
4°5' DIHEDRAL
25'-8" SPAN
ENGINE AIR INTAKE
PROP: SENSENICH SKYBLADE
72" DIAMETER
6'-10" THREAD
Streak 125 85
LEONARD WIECZOREK

Streak-125

PLANE ON THE COVER



By Robert McLarren

WHEN a group of experienced designers of fighter planes set themselves to the task of designing a personal airplane, look out! Years of constant pressure for "performance" and more performance at any cost—day in and day out—ingrains in a designer that single goal so deeply that his pencil and slide rule are grooved to produce an airplane of fighter performance regardless of its basic type. And that, in a nutshell, is the story of the Aero-Flight *Streak*, our Plane on the Cover this month.

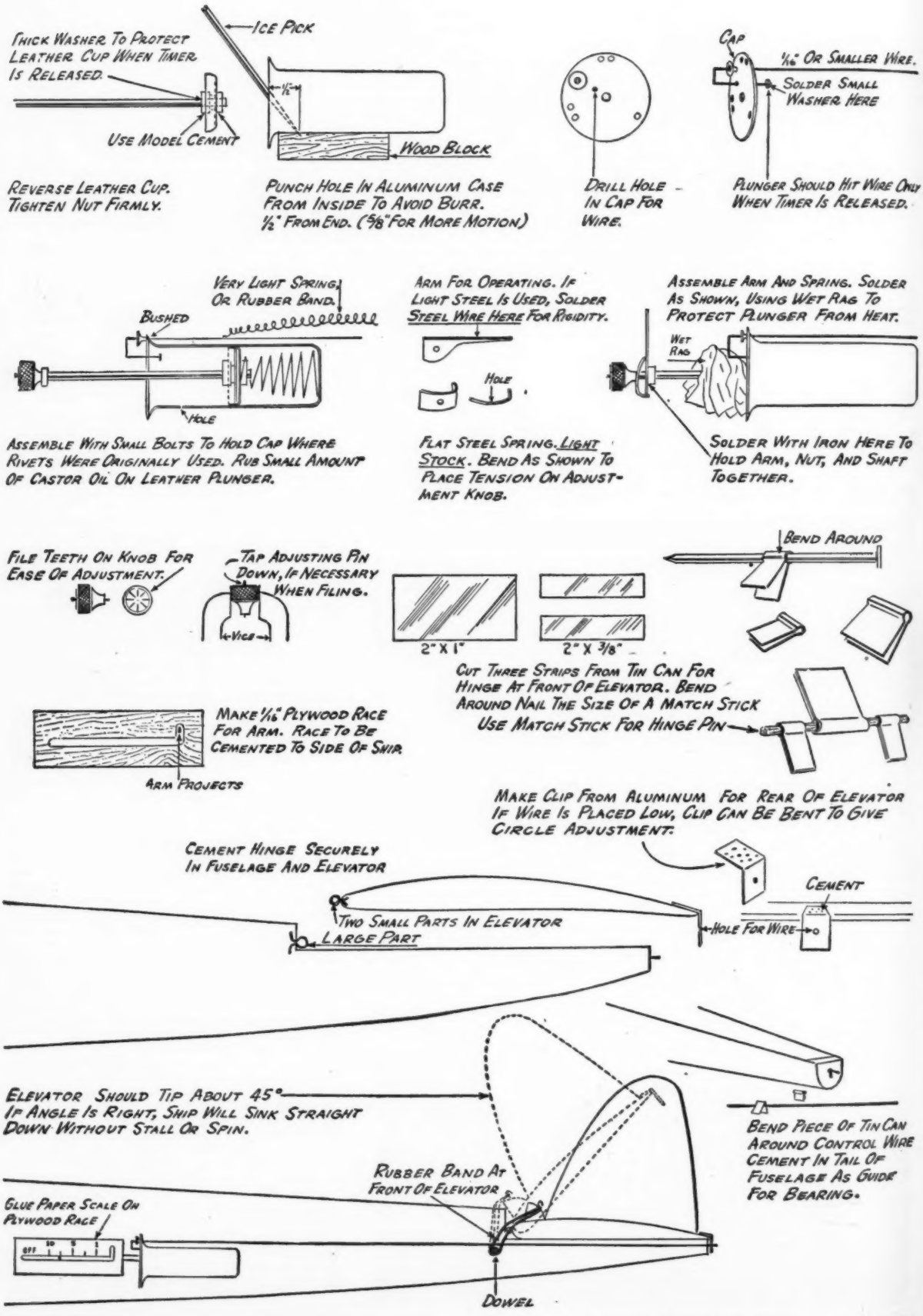
But the story has a strange twist in it. For those fighter designers are former engineers of the Curtiss Airplane Division, yet they are Japanese! Throughout the war, from the early P-40 *Warhawk* to the latest model, through the XP-46, XP-55 *Ascender*, XP-60, XP-62, Navy XF14C and dozens of various models of these fighter planes James K. Nagamatsu, Henry T. Nagamatsu and Frank Yamaguchi worked over their drawing boards and specification calculations at Curtiss. But war or no war these men were Americans first and only Japanese in their Japanese-American ancestry. Their skilled fingers and experienced minds, U.S. born and educated, knew no ancestry as they worked over new fighter planes to join the War in the Pacific.

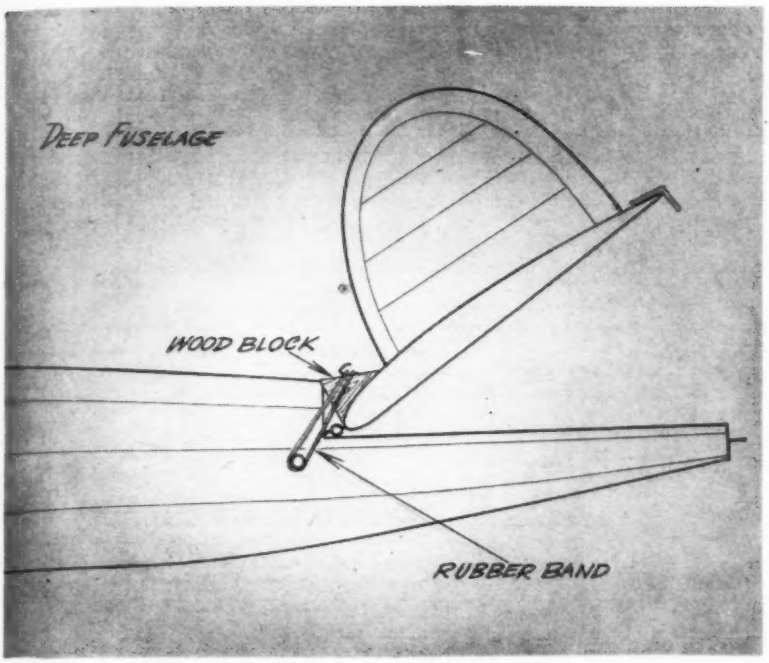
As the war drew to a close, James Nagamatsu began to sketch more and more details into one of the many designs he had toyed with in his hours at home: a two-place tandem personal airplane designed to extract more performance out of a given engine than had ever been achiever before. Gathering his group around him, Nagamatsu grew more and more enthusiastic about the project as its detailed design progressed until at last the group separated from Curtiss and created their own company; Aero-Flight Aircraft Corp. and opened a small office and shop in Buffalo. In less than a year the prototype was completed and had made its first test flight. And the group had accomplished exactly what it had set out to do: created a personal aircraft of unmatched performance—a "lightplane" with fighter features! What more appropriate name than the "Streak"?

During early test flights at Buffalo here is what spectators saw: a trim, fighter-type craft of low wing, all metal design with a large bubble canopy, neatly cowled engine and retractable tricycle landing gear. But what they didn't see is what makes the *Streak* something entirely new in the personal aircraft field and something different from the longtime conventional lightplane.

The wing is built up on an aluminum alloy spar and is metal covered including ailerons. Flush riveting is used throughout. By careful selection and coordination of airfoil sections,

(*Turn to page* 48)


Thick Washer To Protect Leather Cup When Timer Is Released.
Use Model Cement
Ice Pick
½"
Wood Block
Reverse Leather Cup. Tighten Nut Firmly.
Punch Hole In Aluminum Case From Inside To Avoid Burr. ½" From End. (5/8" For More Motion)
Drill Hole In Cap For Wire.
Cap
1/16" Or Smaller Wire.
Solder Small Washer Here
Plunger Should Hit Wire Only When Timer Is Released.
Very Light Spring Or Rubber Band.
Bushed
Hole
Assemble With Small Bolts To Hold Cap Where Rivets Were Originally Used. Rub Small Amount Of Castor Oil On Leather Plunger.
Arm For Operating. If Light Steel Is Used, Solder Steel Wire Here For Rigidity.
Hole
Flat Steel Spring. Light Stock. Bend As Shown To Place Tension On Adjustment Knob.
Assemble Arm And Spring. Solder As Shown, Using Wet Rag To Protect Plunger From Heat.
Wet Rag
Solder With Iron Here To Hold Arm, Nut, And Shaft Together.
File Teeth On Knob For Ease Of Adjustment.
Tap Adjusting Pin Down, If Necessary When Filing.
Vise
2" X 1"
2" X 3/8"
Bend Around
Cut Three Strips From Tin Can For Hinge At Front Of Elevator. Bend Around Nail The Size Of A Match Stick
Use Match Stick For Hinge Pin
Make 1/16" Plywood Race For Arm. Race To Be Cemented To Side Of Ship.
Arm Projects
Make Clip From Aluminum For Rear Of Elevator If Wire Is Placed Low, Clip Can Be Bent To Give Circle Adjustment.
Cement Hinge Securely In Fuselage And Elevator
Two Small Parts In Elevator
Large Part
Cement
Hole For Wire
Elevator Should Tip About 45° If Angle Is Right, Ship Will Sink Straight Down Without Stall Or Spin.
Rubber Band At Front Of Elevator
Glue Paper Scale On Plywood Race
Dowel
Bend Piece Of Tin Can Around Control Wire Cement In Tail Of Fuselage As Guide For Bearing.



On a deep fuselage, this type of stop will hold the elevator at the correct angle after the dethermalizer has operated

Try This Dethermalizer

by C. O. Wright

THE NEW TEN MINUTE RULE and the limitation of one ship for each class make dethermalizers a must for the contests this season. A simple conversion of the large *Austin* timer, applied according to the Carl Goldberg dethermalizing principle, is offered in the accompanying drawings. If the steps in construction are followed carefully, success will be assured. The author has used this principle for a number of years and the mechanical arrangement is about as free from bugs as is possible in model practice.

SELECT A GOOD TIMER—Start with a large capacity air timer which will run at least 15 min. with the valve tight in its seat. This indicates a good valve and good plunger. File the rivets to remove the cap, but be sure no filings get on the leather plunger or inside the cylinder. Punch a hole in the case as indicated with an ice pick, working from the inside, with the case resting on a wooden block. The hole could be drilled, but a burr might result. The hole should be ½" from the tube edge if a motion of ¼" is desired in the release.

Remove the piston and reverse it so that the leather cup will face upward. A small drop of model cement should be used at the nuts to guarantee a seal. Be careful not to get cement on the leather plunger, for in that case the timer will be erratic. Clean hands and bench are important during the work, and a newspaper on the bench will guard against dirt.

APPLY THE RELEASE WIRE CAREFULLY—The hole drilled in the fiber cap must be placed so that the wire with its small soldered washer will not strike the leather plunger on one side or the piston nut on the other. Sixteenth or slightly smaller diameter wire may be used, and it should be as long as necessary to extend beyond the ship's tail. Bush the contact eyelet in the timer cap to the approximate size of the release wire. A smaller eyelet can be cemented in the existing one for this purpose. Solder the small washer in place at the end of the wire inside the timer and make it a clean job. A short coil of small copper wire (2 or 3 turns) makes a good washer to prevent the leather cup edges from striking the cap.

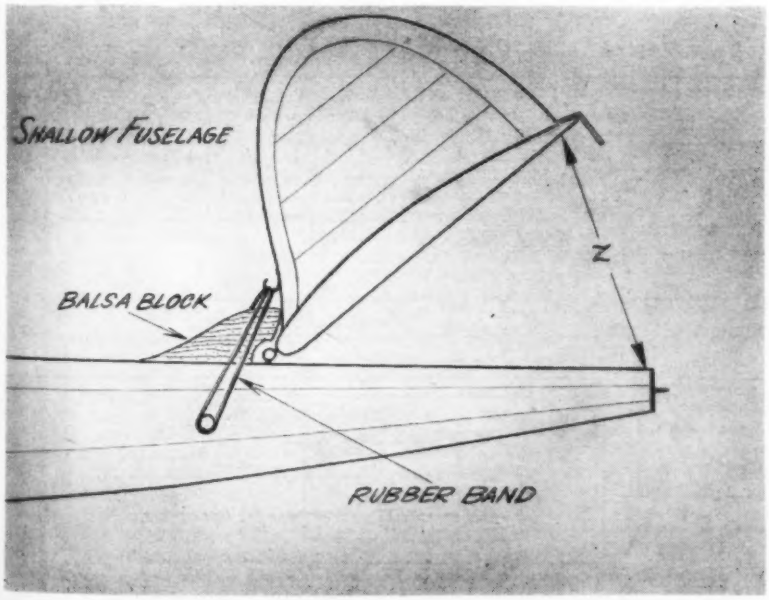
When the cement on the plunger nuts is dry, assemble the timer. Stretch the timer coil spring about an inch and put the large part down with the small coil fitting over the nut at the plunger. If necessary, lubricate the leather with 2 drops of *castor oil*. Avoid too much oil because the valve will not operate properly if oil reaches it. Small bolts are more satisfactory than rivets to hold the cap on the aluminum timer tube.

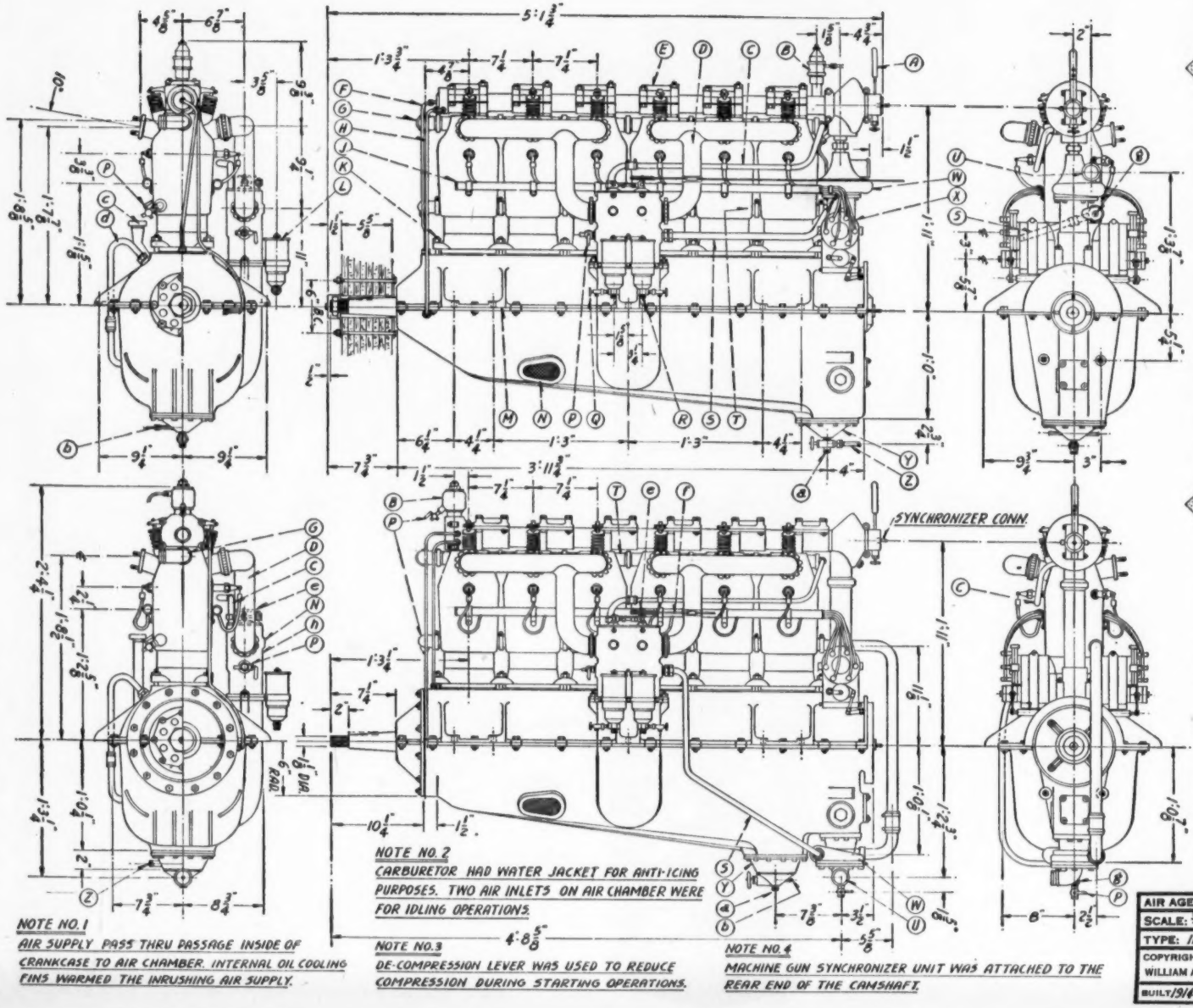
OPERATING ARM AND VALVE COME NEXT—File out the operating arm, as shown, of scrap steel stock. If it is less than 1/16" thick it may be reinforced with a steel wire soldered on as a backbone. The flat spring which supplies tension for the knob may be made of scrap, but it should be light, about 1/64" or lighter stock. The hole may be punched over a hardwood block and should be a loose fit. If flat spring material is not at hand, make the part out of light material and put a few coils of a round compression spring next to the arm as a substitute.

Use your highest skill on the next step. Space must be allowed for the spring to operate. It may be wise to file the nut that goes on before the arm to about half its thickness. Then, if necessary, the valve pin may be driven down in the knob in a vise as shown. *Do this by easy steps so*

(*Turn to page* 53)

Stop for shallow fuselage. A piece of string attached at Z is the simplest stop but doesn't hold elevator very steady





F-1466

BORE 5.51"
STROKE 6.3"
160 H.P. @ 1,400 R.P.M.

(A) DE-COMPRESSION LEVER
(B) AIR PUMP (FUEL PRESSURE)
(C) CARBURETOR HEAT (WATER)
(D) INTAKE MANIFOLD
(E) CAMSHAFT & ROCKER CASING
(F) OIL LINE TO OIL PUMP
(G) WATER INLET ELBOW
(H) OIL LINE FROM OIL PUMP
(J) FIBER SUPPORT TUBE (WIRES)
(K) CYLINDER HOLD-DOWN BOLTS
(L) TWIN JET CARBURETORS
(M) ENGINE MOUNT
(N) CARBURETOR AIR INTAKE
(P) PET COCK - WATER DRAIN
(Q) PET COCK - CARBURETOR DRAIN
(R) FUEL LINE CONNECTIONS

F-1466D-3A

BORE 5.51"
STROKE 6.3"
180 H.P. @ 1,400 R.P.M.

(S) CARBURETOR HEAT (TO PUMP)
(T) WATER INLET CONNECTIONS
(U) WATER OUTLET (TO RADIATOR)
(W) WATER PUMP
(X) TWIN MAGNETOS
(Y) OIL PUMP
(Z) OIL LINE CONN. (FROM TANK)
(a) OIL DRAIN
(b) OIL TEMPERATURE GAGE CONN.
(c) OIL SUMP FILL
(d) OIL BYPASS LINE
(e) THROTTLE PULLEY
(f) THROTTLE CONTROL CABLES
(g) WATER TEMP. GAGE CONN.
(h) AIR CHAMBER

SYNCHRONIZER CONN.

NOTE NO. 1
AIR SUPPLY PASS THRU PASSAGE INSIDE OF CRANKCASE TO AIR CHAMBER. INTERNAL OIL COOLING FINS WARMED THE INRUSHING AIR SUPPLY.

NOTE NO. 2
CARBURETOR HAD WATER JACKET FOR ANTI-ICING PURPOSES. TWO AIR INLETS ON AIR CHAMBER WERE FOR IDLING OPERATIONS.

NOTE NO. 3
DE-COMPRESSION LEVER WAS USED TO REDUCE COMPRESSION DURING STARTING OPERATIONS.

NOTE NO. 4
MACHINE GUN SYNCHRONIZER UNIT WAS ATTACHED TO THE REAR END OF THE CAMSHAFT.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: 3/4 = 1'-0"	GENERAL ARRANGEMENT
TYPE: INLINE	GERMANY'S 160 & 180 H.P.
COPYRIGHT 1948 WILLIAM A. WYLAM	MERCEDES
BUILT 1916-18 BY DAIMLER-MOTOREN GESELLSCHAFT	

Above is an Albatros D1 which was equipped with both 120 (test ship only) and 160 hp Mercedes engines.

The Hannover CL IIIa shown here was another famous German warplane equipped with the Mercedes 160 hp engine.

WORLD WAR I

By Robert C. Hare

PART ONE

THIS MONTH and next we will have a slight departure in the the usual subject of this exclusive MODEL AIRPLANE NEWS feature. Instead of a description of a famous airplane, we will describe an historic engine . . . perhaps the most famous of World War I powerplants.

This engine was of German manufacture. Interestingly enough, it was as synonymous with airpower in 1914-18 as were the aircraft it powered. It was respected by Allied pilots who fought planes equipped with it; it was feared by Parisians and Londoners, among others, who learned to recognize its distinctive drone when installed in the bomb dropping Gothas.

Tall stories are likely to crop up around any object that is above average. But it is no tall story that the *Mercedes* engine was one of the finest pieces of internal combustion design to be mass-produced during the First World War.

Mercedes engines were produced in Germany by the Daimler Motoren Gesellschaft, G. m. b. H., with factories at Stuttgart and Sindelflingen. Engine types were identified by the code letter "D" (for Daimler) and ran from the D I (100 hp) to D VI (500 hp). As early as 1910 the reliability of the *Mercedes* engine was transferred from the automobile to the airplane, and by 1911 a 6 cylinder, 100 hp model had been awarded a prize of $25,000 by the Automobile Technic Society, an organization in Germany roughly equivalent to our S. A. E.

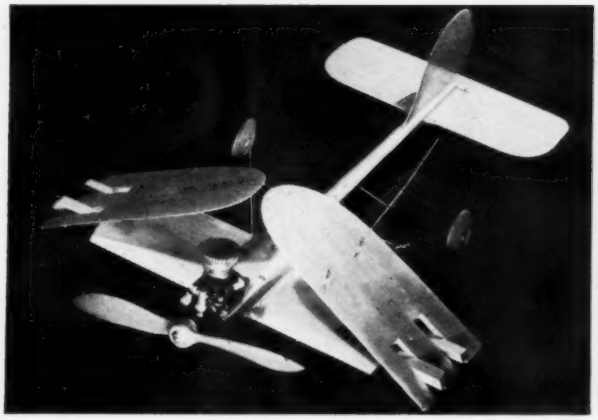
As far as its early career in the air was concerned, the *Mercedes* was not very popular until 1911 when the pioneer German aviator, Hirth, really put the engine on the map by a series of outstanding flights. On the basis of this success alone was the engine made popular. Aircraft designers began building their airplanes for the reliability and power the *Mercedes* possessed rather than for the advantage of lightweight held by some of the contemporary types.

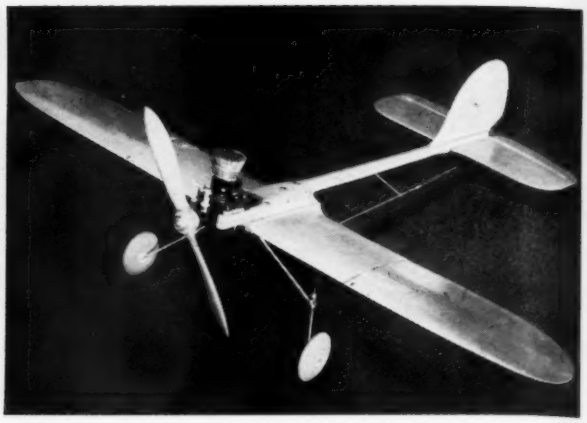
Before Hirth got through with this fine engine it was almost universally adopted by early German flyers, and it is said that between 85% and 90% of pre-W.W.I German aircraft were *Mercedes* powered.

The man behind all this was a modest but highly intelligent engineer. A perfectionist, he was at the same time conservative and his designs were to become famous for reliability rather than for their demonstrations of advanced thought. This man's name was Maybach. He was a collaborator and co-founder of the Daimler company with Oberingenier Gottlieb Daimler.

One of the earliest applications of the Maybach-designed *Mercedes* engines was for Zeppelins. Later the German government subsidized Maybach in the organization of his own factory for exclusive construction of Maybach engines for airships.

The *Mercedes* production engines were all of the 6 cylinder in-line type except for an 8-cylinder model which was used on certain heavy aircraft. The firm's first big success as far as W.W.I was concerned, was a 100 hp model with a bore of 120 mm and 140 mm stroke. This model was used in the early Rumpler and Jeannine Taube types types and the earliest Albatros, D.F.W. and other well known makes. It was experimentally produced as an inverted engine, but because of troubles with a pressure feed oil system it was abandoned. The upright basic engine was identified as the D I and served halfway through the war in training schools. (*Turn to page* 41)

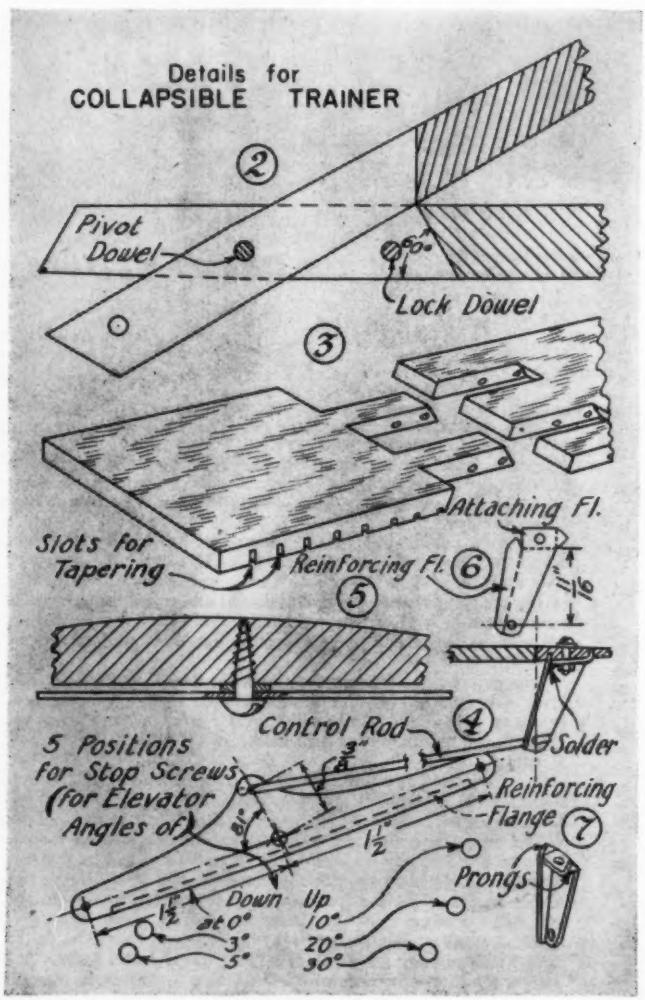




Collapsible Trainer

EVEN IF BUILT NON-FOLDING, THIS IS A FINE BEGINNER'S MODEL

by Ray Rusher



LEON SHULMAN'S *Drone* Compression Ignition Engine, requiring no electrical ignition system, reduces engine operating troubles to a minimum. Desiring a distinctive plane particularly adapted to the *Drone*, and one that reduces assembly time on the flying field to a minimum yet can be carried in a relatively small case for ease of transportation, the *Collapsible Trainer* was developed.

Servicing the *Drone* also requires a minimum of tools, no extra ignition batteries, booster battery, battery tester, etc. and no special tools for work on an electrical ignition system. All these factors contribute to reduction in weight for the contents of the carrying case. A reel of control wire and a few extra bottles of fuel are all that is required in addition to a prop wrench and a few different size props in order to be completely equipped for enjoying a day of flying.

The collapsible design of this *Trainer* requires a minimum of removable parts (two dowels) and features for collapsibility:

(1) A three section wing, two end sections being hinged to a centersection so they can fold to a position no higher than the engine.

(2) A landing gear that is pivoted to swing to a position with the wheels between wing and tail.

(3) A tail skid that can be turned to a position flat against the stabilizer.

WING—Centersection of the wing is provided with hinge extensions at its ends between which complementary hinge extensions on the inner ends of the end wing sections are dovetailed. Each end section is hinged to the centersection by a pivot dowel, and lock dowels hold the end sections rigidly extended in relation to the centersection. When the lock dowels are removed, the end sections can be folded as illustrated by dotted lines in front and slide views.

The center wing section is preferably made of lightweight mahogany, white pine or sugar pine. Hard balsa can be used but will not lighten the plane much and will sacrifice considerable strength. Since we are using an engine that doesn't require a spark coil and batteries we can afford a few ounces additional for the material of the plane itself. Check the density of the wood you use, however, as different pieces of the same kind of wood may vary considerably. This is done by weighing and measuring any piece of wood you think is suitable and then solving the following formula:

$$D \text{ (density in lbs. per cu. ft.)} = \frac{108W \text{ (Weight in oz.)}}{twl \text{ (thickness, width and length in in.)}}$$

D should not exceed 29 or 30. This is average density for lightweight mahogany. Density for sugar pine is about 22.5, while hard balsa weighs about 15 lbs. per

cu. ft. The end wing sections can be formed of hard balsa, although here too mahogany or pine can be used without adding much weight.

The hinge extensions are best formed for maximum accuracy on a circle saw. For a folding wing 1/2" thick at the center suitable for the *Drone* engine, the extensions should be 3" long to result in folding to the angle shown in front view and in drawing 2. Set the saw in relation to the saw table so that the bottoms of the hinge extensions are at an angle of not more than 60° to the surface to avoid any possibility of interference with the hinge action.

Using either the rip or cross-cut fence and a stop on the saw table to be engaged by the end of the wing section as shown in drawing 16, saw into the centersection at each side of each hinge extension; then saw out the wood between the extensions by successive cuts spaced apart slightly less than the thickness of the saw blade. The extensions should be approximately proportioned as in drawing 1 to accommodate the airfoil shape and the dowels most effectively.

After the hinge extensions are cut on the center wing section, saw those on the end sections with the same stop and saw depth settings, and all extensions will be of identical length. The end sections are left the same thickness as the centersection during the hinge extension forming operations and during the drilling of the holes for the dowels. Be sure to form the end section extensions offset in relation to those of the centersection, and a snug interfit with them.

Finally bevel the ends of the hinge extensions by feeding them against the saw, still set at the same depth of cut so these ends will have the same angle as the bottoms of the notches between the extensions. The stop is adjusted for this purpose to a position where the saw just coincides with the upper forward corner of an extension as shown dotted in drawing 16. The saw of course cuts the notch bottoms and the hinge extension ends slightly concave, but these can be sanded to provide a more perfect fit before the dowel holes are drilled. The notch bottoms and the outer ends of the hinge extensions in drawing 3 are square across the board when viewed from the top but assume a curved shape as shown in the plan view after the airfoil shape is carved into the wing.

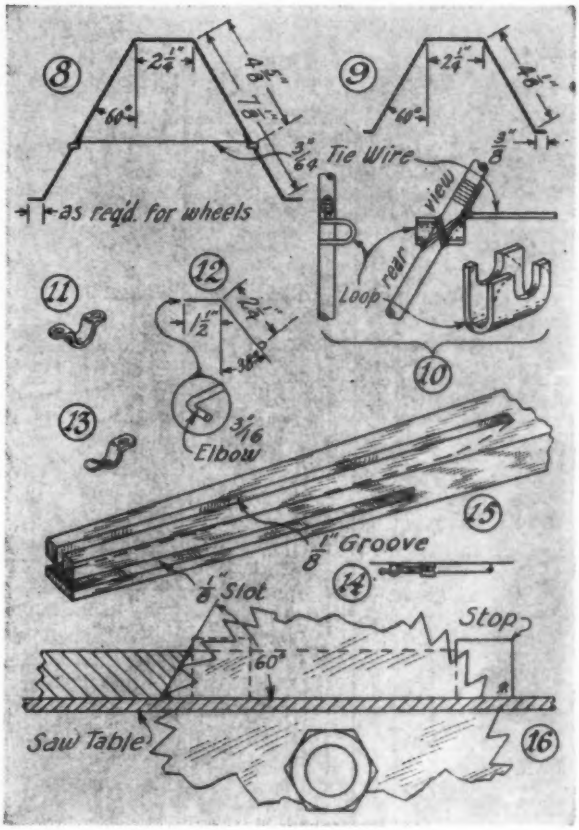
The next operation is to drill the 4 holes for the dowels. Drill the hinge dowel holes first while the end wing sections are fitted tightly to the centersection and the wing clamped to a vertical face plate on the drill table. The holes are drilled at the exact center, end to end, of the hinge extensions for maximum folding angle but slightly below the vertical center as in drawing 1 so that the hinge dowel will extend a substantial distance through the rearmost hinge extension. Be sure the wing trailing edge is parallel to the drill table so the holes will pass squarely through the center of each hinge extension; otherwise the hinge will bind when operated. Have the pivot dowel in position when the hole is drilled for the lock dowel to further insure proper alignment.

If you don't have a 1/8" drill long enough to pass through the width of the wing, grind a reduction on about 3/16" of the shank of any 1/8" drill, slip a 1/8" O.D. brass tube on the extension and solder it in position. The extension should be square or triangular, and a similar shape filed in the bore of the tube to aid the solder in holding the tube against turning on the drill. If care is used in drilling, withdrawing the drill nearly out of the hole every 1/4" or so to remove chips, a drill thus lengthened will be found entirely satisfactory for the purpose.

The end sections of the wing are next cross-slotted for taper by means of progressively deeper cross-slots sawed in their bottom surfaces as shown in drawing 3, the deepest one being 3/8" at the wingtip which leaves it 1/8" thick. By then chiseling and planing down to the bottoms of the slots the desired taper is had which results in 3/8" dihedral, sufficient for a U-Control Trainer.

The outline shape of the wing is next cut with a jig or coping saw, following which your favorite airfoil or the Davis airfoil of drawing 1 can be carved along the wing with the exception of about 2-1/2" at the center left full thickness for attachment of the fuselage as shown at fuselage stations B and C-D. Carve the wing next to the sides of the fuselage as shown at these three stations.

Have the end sections of the wing mounted on the centersection with all 4 dowels in place during the airfoil carving operation so that all 3 sections and their hinge extensions blend smoothly together. The dowels should be sanded down if they are too tight to be pushed readily into place. Be careful not to have any play, however. For final assembly the pivot dowels should be cemented lightly so they can be forced out if the occasion ever arises. For instance, an outer wing section may be broken and you will want to replace it with a new one. The lock dowels may be pushed into and out of position for flying and folding by using a 7/64" dowel or metal rod as a punch. For convenience, a small knob should be secured on one end of the punch.



FUSELAGE—The fuselage is first ripped to 3/4" x 2-1/4", and the circle saw is used to cut a vertical groove and a horizontal slot in its rear portion as shown in drawing 15 to receive the rudder and stabilizer. The sides are tapered from 1-1/4" just back of the wing to 3/4" wide at the rear end after the groove and slot are cut. The shape at first should be as shown dotted in the plan view so that the wing can be adjusted as described in the following paragraph.

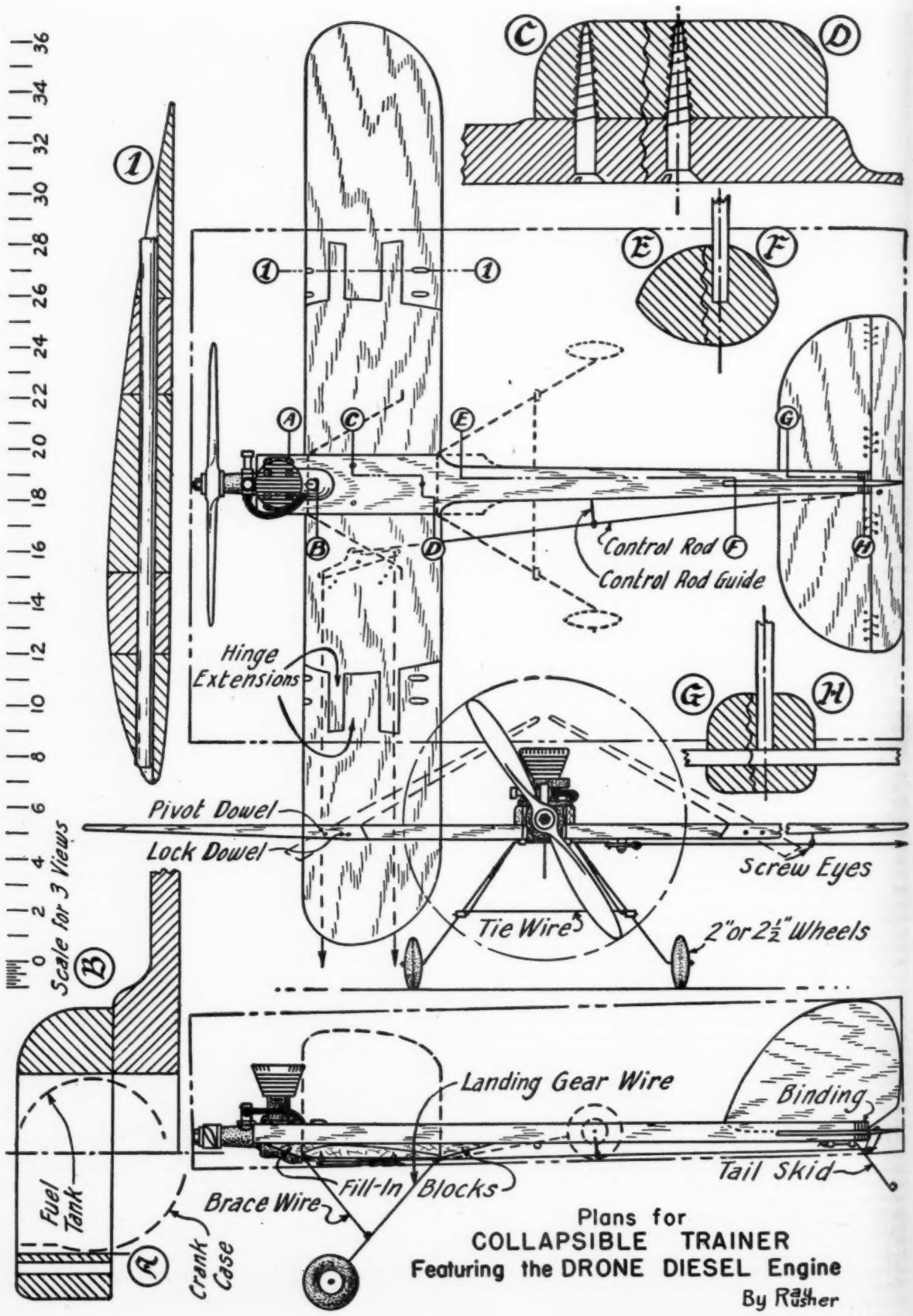
Cut out the front end of the fuselage to provide two horns for mounting the engine and to clear the crankcase and the fuel tank (see fuselage stations A-B) and carve the rest of the fuselage to the shape shown at stations C-D, E-F, and G-H. Since there is no spark coil or batteries to be housed in the fuselage, it can be of minimum crossection consistent with strength. The elliptical shape suggested for station E-F minimizes side wind effect, so that the *Collapsible Trainer* is capable of being flown in higher winds than those types of planes having scale model fuselages.

As the plans have been drawn, the stabilizer and rudder are made of balsa and the elevator of mahogany; proper balance requires the wing leading edge to be 2" or 2-1/2" back of the forward ends of the engine mounting horns on the fuselage. Check balance by temporarily binding the fuselage to the wing with string (after *all* parts of the plane have been assembled with the exception of the control rod); the fuselage can be slid forward or backward till proper balance is had. The balance point should be at about 35% of the wing width from leading edge to trailing edge.

The fuselage is then permanently connected to the wing by means of 3 heavy countersunk wood screws as shown at fuselage stations C-D. Be sure the fuselage is at exactly 90° to the wing in plan view. You will have to notch the forward edge of the wing to accommodate the fuel tank. The fuselage is then carved at the back of the wing to the full line shape shown in the plan view so as to meet on a curve with the wing. Fill-in blocks of balsa can be cemented to the front and rear edges of the wing and to the bottom of the fuselage to provide better streamlining.

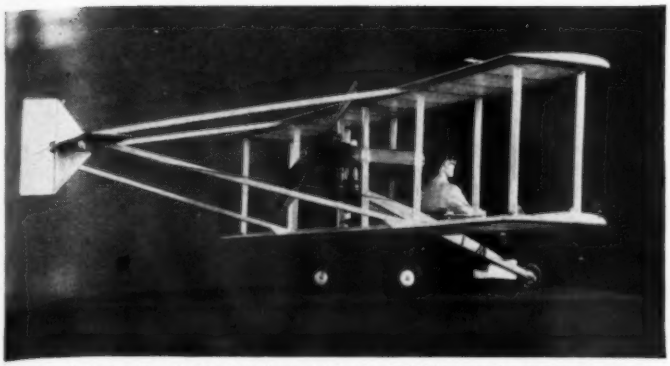
The engine is mounted on the fuselage by means of four No. 5 R.H. wood screws 7/8" long. It is best to use 1" screws, cutting off 1/8" of the point. Drill 3/32" holes in the horns for the screws and clamp each horn in a vise while running the screw in the hole. This will avoid splitting the horns.

(*Turn to page* 60)



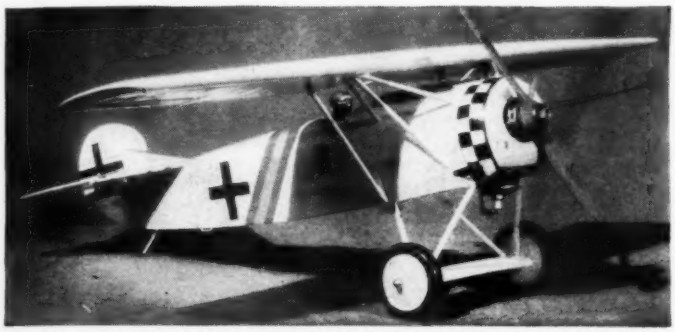
Plans for COLLAPSIBLE TRAINER Featuring the DRONE DIESEL Engine

By Ray Rusher

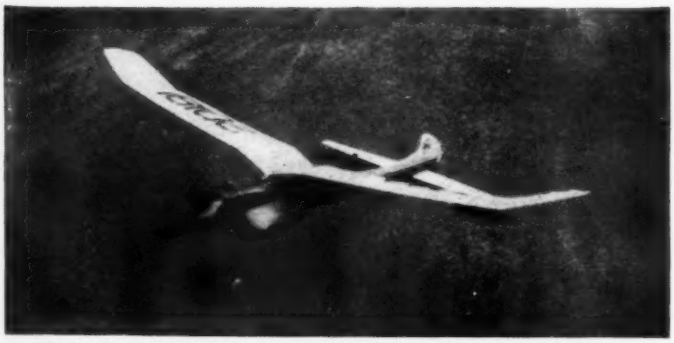


No. 1 A real antique! Control line model of a 1909 biplane by Arthur C. Chase

Air Ways



No. 2 World War I Fokker D8 by Ralph Webb is pulled by *K & B Torpedo*



No. 3 Unusual design by J. Peterson has *Atom* engine and weighs 11 oz.

NEWS OF MODEL AIRPLANE EXPERIMENTERS ALL OVER THE WORLD

CONTEST DATES. We continue to receive notice of contests too late to be included in our "Club News" department. Let us stress again that we must receive these notices at least 6 weeks in advance of the magazine issue for which they are intended. For example, this issue is dated July and will be on the newsstands June 8. The material used in this issue was sent to the printer the last week in April. Therefore we had to omit from this issue all dates of contests scheduled earlier than June 8.

We often receive letters from model club secretaries who complain that though they have sent in contest dates we did not print them. This is because the notice reached us too late. We receive so many of these notices that it is impossible to acknowledge them. If the proposed contest is to be held *after* publication date of the issue being worked on, all the notices are put in "Club News," both under the respective state and also in our "Coming Contests" list. So get your dates in early, and we will print them in time to do your contest some good.

RADIO CONTROL. Interest in this subject seems widespread, even among those modelers who don't expect to engage actively in the field just yet. Those who want to go into radio control seriously will undoubtedly be interested to learn of the formation of the *Radio Controlled Models Society*, started last winter in England. This group of experimenters hope to interest modelers of other countries in radio control work, and if possible to bring about affiliation with such groups.

The Society has already started an ambitious program of development and has printed a comprehensive preliminary bulletin on the work being done. All types of radio-controlled models will be covered, including planes, boats, race cars and so on. Interested readers can reach the Society by writing the Secretary, J. C. Hogg, 24 Springfield Road, Sale, Cheshire, England.

AIR AGE EDUCATION. It is interesting to note that the state of Missouri is conducting a comprehensve program of aviation education, directed through teachers in the state. Summer session workshops for education students are the major activity in this program at present.

More attention will also be given to youth organizations such as Air Scouts and Wing Scouts, groups which already have aviation programs but need encouragement to set up local activity.

We hope other states will put similar emphasis on aviation work, with proper instruction in the model phases, to give youth a firm foundation of knowledge.

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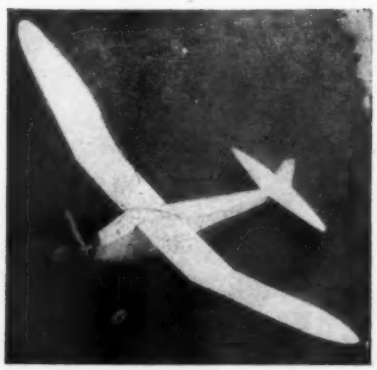
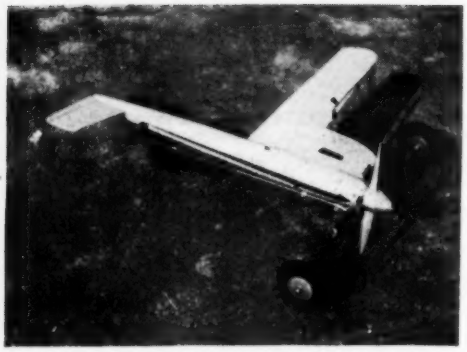
Picture No. 1 was submitted by Arthur C. Chase (2559 Potter St., Eugene, Ore.). It shows

No. 4 Jack Erlenborn with scale Piper Cub



No. 5 CO2 flier by R. Hourdequin

No. 6 L. T. Bosman from Holland holds R. C. Stinson L5



No. 7 Radical speedster by Glenn Crist has flown well

his idea of what one of the ancient old planes of about 1909 would look like. He tells us that the top speed is about 31 mph and the ship is powered by an ancient *Hi-Speed* engine. Wingspan of this antique is 27" and total flying weight including Orville, the pilot, is 18½ oz.

Ralph Webb (3027 E. Tiffin, Des Moines, Iowa) sent in No. 2, which World War I fans will immediately recognize as the Fokker D8. This ship also has a pilot but Mr. Webb notes that his (the pilot's) shoes had to be removed to make room for the bellcrank. This ship is painted yellow and trimmed in black, and is powered by a K & B *Torpedo* 29.

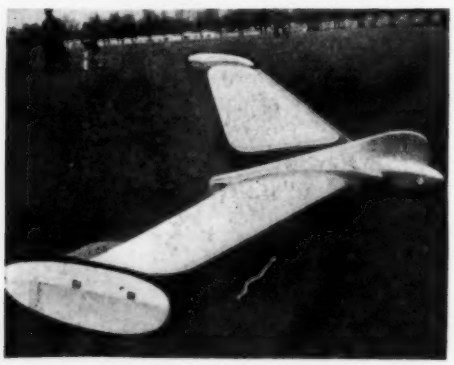
Morris Maltby, Corresp. Sec. of *The Flying Bisons* (Buffalo, N. Y.) sent us No. 3, an original free flight design by John Peterson. The ship is powered by an *Atom* engine, has a 32" span and weighs a scant 11 oz. When first tried out the ship was rather tricky, but an enlarged tailplane solved this problem and it is now a fine flier.

In No. 4 we see Jack Erlenborn holding the framework of the scale Piper *Cub* he is building with his brother Jim. The model has a 7' wingspan and is powered by an *O&R* 60. The ship is designed for radio control flying, and the Erlenborn brothers expect to install the R.C. equipment as soon as the new citizens band allows operation of this type. Jack and Jim have built a couple of control line models, but they much prefer free flighters even though the last one they constructed cracked up on the first flight.

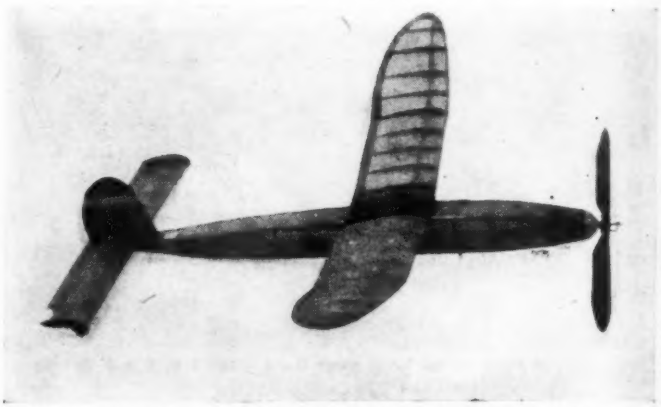
A free flight CO2 model built by Robert A. Hourdequin (Frankford, Dela.) is shown in No. 5. This highly successful original design is powered by an *OK* and has been flying since last Christmas; most flights are of about 3 min. duration although the ship has on occasion turned in an O.S.S. flight.

From Amsterdam, Holland, we received No. 6 showing L. T. Bosman proudly holding up his scale Stinson L5. Mr. Bosmon (105 St. Willibrordusstraat) enlarged the Stinson plans from May 1947 MODEL AIRPLANE NEWS. His ship is 2½ times the size of the one designed by Henry Struck and

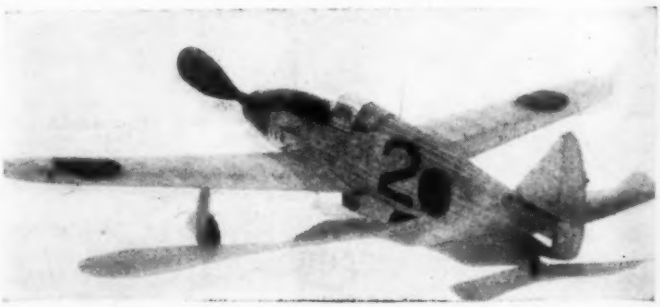
No. 12 Tailless design by A. J. Cockle has 8½' span



No. 8 First control liner by Geo. Spence, this Westland *Whirlwind* is fine flier



No. 9 Arthur Bassett has found this ship highly successful, even in winter



No. 10 Pride and joy of Struan Robertson is this detailed flying scale Jap "Tony"

No. 11 Chet Lanzo holds his latest Wakefield job; motor run is 2:45 sec.

is practically all balsa including the covering. This ship was also designed for radio control although Mr. Bosman has not been too successful in his R.C. work so far due mainly to the difficulty in obtaining the proper material in his country. He is very anxious to get in touch with radio control enthusiasts in this country with the view of exchanging ideas on this type of model flying. His Stinson has a span of 6½', and total weight with motor and radio equipment is 80 oz. The wing airfoil is the Goldber G5 and the ship is equipped with a "homemade" *Brown Junior* motor.

The unusual control speed design in No. 7 was submitted by Glenn Crist (218 E. 130 St., Hawthorne, Calif.). Mr. Crist is an engineering student at Northrup Aeronautical Institute and designed this ship to try out several theories he developed concerning speed models. At the time the photo was sent us the ship had turned in 6 successful flights and had been unofficially clocked at 151 mph. Overall length is 20" and wingspan 14". The stabilizer is half the usual butterfly design and a *Fox* 59 supplies the motive power.

No. 8, submitted by Geo. Spence (123 W. Main St., Westboro, Mass.) was his first attempt at a control model. The ship is a Westland *Whirlwind* built with the aid of a 3 view drawing and pictures from a past issue of M.A.N. Two Aero *Mighty Midgets* supply the power, and the ship is completely built of balsa with a high gloss finish. Total flying weight is just over 4 lbs. and the landing gear is non-retractable. The model has proven to be a beautiful flier, and even though Mr. Spence is inexperienced in control flying he has had little trouble handling it.

The model sitting in the snow in No. 9 is a *Gollywock*, powered by 18 strands of 1/8" flat brown rubber. The builder, Arthur C. Bassett (130 Toledo St., Adrian, Mich.), had considerable luck flying the model this winter despite freezing weather and strong winds. The first 3 flights were r.o.g. from a small sheet of cardboard, and the average time of these flights was around 1¼ min.

The attractive flying scale model in No. 10 was built by Struan Robertson (3492 W. 34 Ave., Vancouver, B.C., Canada). Mr. Robertson is an ardent free flight enthusiast although most of the members of his local organization *The Vancouver Gas Model Club* are control line enthusiasts. The scale model shown in the picture is a Japanese *Tony* 2 fighter, built in 1946, and is completely detailed even to sunken instruments on the panel. The ship was built originally to enter in a local flying scale rubber contest and though all his friends told him it was foolish to enter a low wing design, the ship placed 2d and turned out to be a very good flier.

Oldtimer Chet Lanzo (12928 Parkmount, Cleveland 11, Ohio) sent in No. 11 in which he holds his latest Wakefield type model. Chet, who is Pres. of the *Cleveland Balsa Butchers*, writes that the model has a rubber run of 2 min. 45 sec., and total weight of 10 oz. The wings are of the plug-in type and the semi-streamline fuselage is covered with silk. A parachute dethermalizer with fuse style timer is fitted.

No. 12 was submitted by G. B. Dun (224 Kettering Road, Northampton, England). This shot, one of a set showing representative types of models now being flown in England, is of an interesting tailless glider developed by A. J. Cockle from a small Swiss design originated by Erik Voit. The model shown has a wingspan of 8-1/2' with 14-1/4 sq. ft. wing area, and the airfoil section is the old standby R.A.F. 32. Total weight of the ship in flying trim is 5-3/4 lbs. The wingtips are washed out 3°, and smooth landing is made possible by a 3-1/2" airwheel set into the nose of the "fuselage."

COMING CONTESTS

June 11, CALIF.—Richmond U-Control
June 11, N.Y.—Queens (NYC) Thermal Thumbers 3rd Annual
June 12, TEXAS—Amarillo 1st Annual West Texas
June 12-13, GA.—Atlanta Annual Southeastern
June 13, CALIF.—Fresno 1st Annual U-Control
June 13, CALIF.—San Rafael U-Control
June 13, TENN.—Crassville-Volunteer State Model Airplane Champ.
June 13, WASH.—Seattle Free Flight
June 13, CALIF.—Marin Co. U-Control
June 13, CONN.—Bridgeport 2nd Annual U-Control
June 13, IND.—Anderson Johnnies Free Flight
June 13, NEBR.—Jr. Chamber-Legion, Free Flight, Control Line
June 13, N.J.—Passaic Middle States Rubber Champ.
June 13, OHIO—Findley Free Flight & U-Control
June 19, MISS.—Delta States Model Airplane Meet
June 20, CALIF.—Haywood U-Control
June 20, CALIF.—Newman Gustine Annual Free Flight
June 20, CALIF.—Free Flight at Naval Air Station, Crows Landing, Los Angeles
June 20, LA.—Lake Charles Annual U-Control
June 20, PENNA.—Bristol Meet
June 20, MO.—K.C.M.M.—Pete's Hobby Shop, Control Line
June 20, N.J.—9th Annual Model Airplane Contest by *Vineland Aeronauts*
June 20, N.Y.—Freeport, L.I. U-Control
June 20, N.C.—3rd N. Carolina Free Flight, High Point
June 20, OHIO—Toledo Free Flight
June 25-26, TENN.—Tennessee State Meet
June 25-27, CALIF.—All-Western Open, Los Angeles
June 26-27, IOWA—Des Moines Hawkeye Air Olympics—All Classes
June 26, CONN.—*Branford Sky Wolves* 2nd Annual Control Line
June 27, ILL.—Rockford—All Classes
June 27, MAINE—Augusta U-Control
June 27, N.Y.—9th Annual Invitation Model Airplane Derby
June 27, OHIO—Akron—All Classes
June 27, PENNA.—Johnstown Meet
June 27, OHIO—Cincinnati U-Control & Free Flight
June 27, WASH.—Walla Walla Free Flight & Stunt
June 30, N.J.—15th National Soaring
July 3, OHIO—Cleveland Junior Air Races
July 3-5, IOWA—Des Moines Tall Corn Model Airplane Meet
July 4, CALIF.—*L.A.A.M.* Closed U-Control
July 4, N.C.—Salisbury U-Control
July 5, N.Y.—Patchogue (L.I.) U-Control
July 5, PENNA.—"Phila. Bulletin" U-Control (Flying Circus)
July 10, CALIF.—San Francisco Northern Calif. Championships
July 11, CALIF.—San Francisco Annual U-Control
July 11, CANADA—10th Annual Internat. Model Aircraft
July 11, IND.—Clinton Speed Stunt Scale
July 11, IOWA—Storm Lake Flying Club U-Control
July 11, MO.—Kansas City Sky Kings, Free Flight
July 11, N.J.—Middle States Free Flight Gas Championships—Passaic
July 11, WISC.—Milwaukee U-Control
July 11, WISC.—Racine Free Flight
July 17, MO.—Sedalia Kiwanis Club, Free Flight & Control Line
July 17-18, KY.—Louisville Annual—All Classes
July 17-18, LA.—8th Annual Gulf States Meet—All Classes
July 17-18, IND.—Legion, Indianapolis Star
July 18, IOWA—Cedar Rapids Annual John Pavlis Memorial Meet
July 25, CALIF.—Visalia U-Control
July 25, IND.—Portland Free Flight Contest
July 25, IND.—Terre Haute Speed Stunt
July 25, N.Y.—2nd Annual Long Island Championship
July 25, OHIO—Warren Contest
July 25, VA.—National Capitol VFW Meet
Aug. 1, CALIF.—Sacramento *Skyoneers* Free Flight
Aug. 1, ILL.—U-Control at Chicago Heights
Aug. 1, PENNA.—3rd Annual Gas Model Meet
Aug. 3-7, KANS.—17th NATIONALS at Olathe
Aug. 8, CALIF.—Richmond U-Control
Aug. 8, CALIF.—Tulare Quarterly Free Flight
Aug. 8, N.J.—Irvington Annual U-Control
Aug. 8, N.J.—Middle States Glider Championships—Passaic
Aug. 15, CALIF.—Santa Barbara Free Flight
Aug. 15, N.Y.—Valley Stream (L.I.) Free Flight Gas
Aug. 18, MICH.—2nd Plymouth International at Detroit
Aug. 22, WASH.—Seattle U-Control
Aug. 22, CALIF.—Palo Alto U-Control
Aug. 22, ORE.—Medford Free Flight
Aug. 22, MAINE—Annual Portland Contest
Aug. 22, N.Y.—L.I. *Skyscraper* Meet
Aug. 29, N.C.—N.C. State Champ. Rubber, CO2, Glider-High Point
Aug. 29, IOWA—Free Flight at Cedar Rapids. Ill.-Iowa Aero Assoc. closed
Aug. 29, PENNA.—Doylestown Kiwanis Club & Kiwanis Aero Club Contest
Aug. 29, WISC.—Badger State Regional U-Control, Milwaukee
Sept. 3, IOWA—Wallace Blake, Free Flight & Control Line
Sept. 4-6, UTAH—Salt Lake City Douglas Trophy Contest
Sept. 5, IND.—Indiana Gas Model Assn. Free Flight, Indianapolis
Sept. 5, CALIF.—L.A.A.M. Closed Rubber & Glider
Sept. 5, MO.—Model Aircraft Inst. Free Flight & Control Line
Sept. 6, ILL.—Naperville Free Flight
Sept. 5-6, IOWA—2nd Annual Model Meet, Waterloo
Sept. 12, MICH.—Hydro Detroit (tentative)
Sept. 12, N.J.—Middle States U-Control, Passaic
Sept. 15, MAINE—Augusta Annual Flying Maniacs
Sept. 19, CALIF.—Los Banos Free Flight
Sept. 19, CALIF.—Vallejo *Sky Jockeys* U-Control
Sept. 19, N.Y.—Brooklyn *Record Reckers* Free Flight & Control Line
Sept. 19, OHIO—Shelby Free Flight
Sept. 22, ORE.—Salem Free Flight
Oct. 3, CALIF.—Sacramento Free Flight Gas
Oct. 3, CALIF.—Stockton U-Control
Oct. 3, MICH.—Free Flight Detroit (tentative)
Oct. 10, CALIF.—San Diego U-Control
Oct. 16-17, NEV.—Las Vegas U-Control
Oct. 17, CALIF.—Gilroy Free Flight
Oct. 17, CALIF.—San Diego U-Control
Oct. 17, CALIF.—*Thermal Thumbers* Outdoor Rubber Stick & Cabin Contest (Jrs. & Srs. only)
Oct. 24, CALIF.—Los Angeles U-Control (*L.A.A.M.*)
Oct. 31, CALIF.—Fresno Semi-Annual Free Flight
Nov. 7, CALIF.—*East Bay Aeroneers* Free Flight
Nov. 7, CALIF.—*L.A.A.M.* Closed Indoor
Nov. 21, CALIF.—Los Angeles Semi-Annual Free Flight (*L.A.A.M.*)
Nov. 28, CALIF.—Ontario U-Control
Dec. 5, CALIF.—*L.A.A.M.* Closed Free Flight Gas
Dec. 12, CALIF.—Los Angeles Free Flight Jr. (*L.A.A.M.*)

News of Modelers

We have received a request from 30, Highfield Drive, West Wickham, Kent, England for a correspondent who would like to exchange plans, kits, engines, etc. The writer of this letter neglected to sign his name but mentioned that he has been building models for 14 years. He would also like to arrange contests between his own club (West Kent) and clubs in this country.

From R. Dyoniziak (Kolomlodziezy Aeroklubu Lodzkiego, Lodz, UL. 6-go Sierpnia 1/3, Poland) comes a request for a correspondent who will exchange American aero periodicals for those of Poland.

Selwyn Fisher (97 Kay St., Darwen, Lancashire, England) wants a pen-pal in the U.S.A. who is a modeler and Boy Scout. He is 15 and has just started model work.

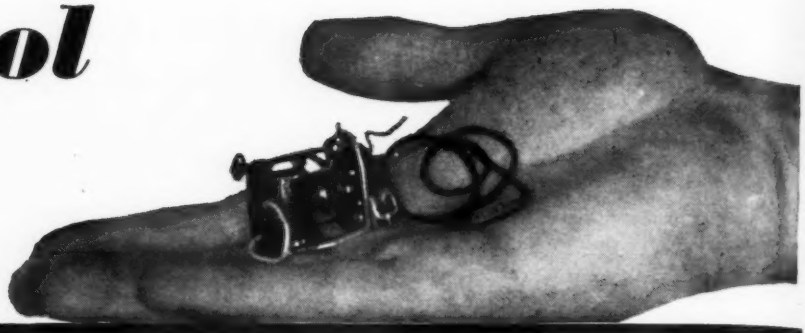
John M. Daulby (109 Jersey Rd., Osterley, Middlesex, England) wishes an American pen-pal interested in all branches of aeromodelling and who would like to swap magazines. John is 16 years old.

From Germany we hear that Hans Hennig (Herford (21a) Hermannstrasse 21, British Zone) has been trying to obtain second hand copies of MODEL AIRPLANE NEWS and other aeronautical literature. Who can help him out?

Brian Cooper, a Flight Mechanic in the R.A.F. (163 Whitton Ave., Greenford, Middlesex, England) is looking for a pen-

(*Turn to page* 62)

Control That Ship!



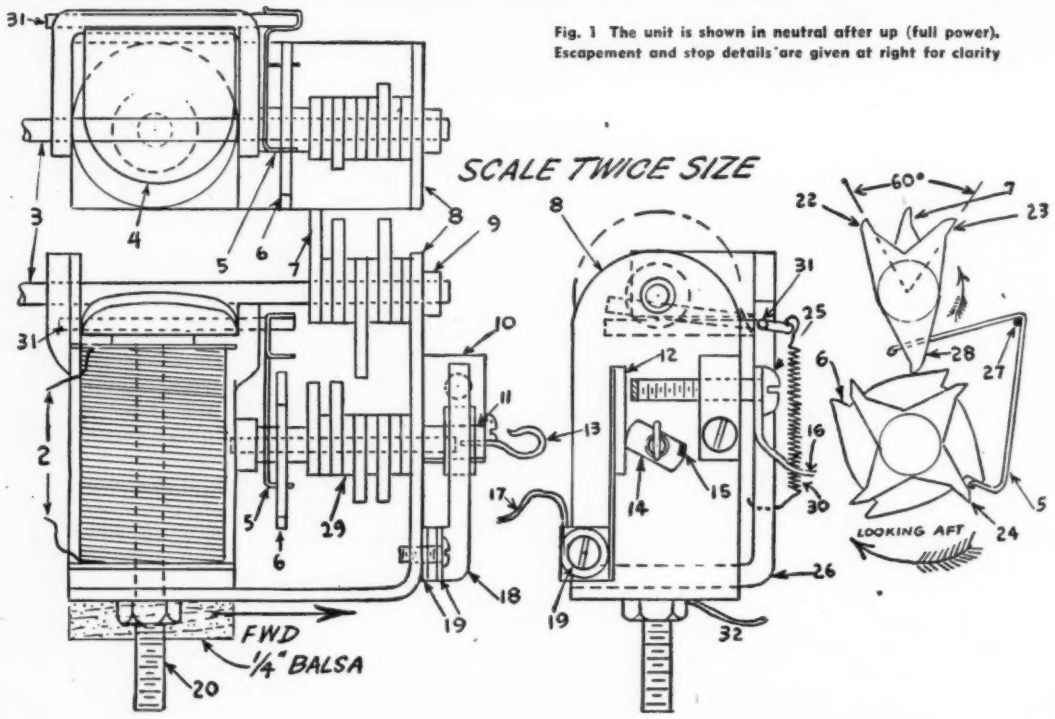


Fig. 1 The unit is shown in neutral after up (full power). Escapement and stop details are given at right for clarity

PARTS AND MATERIAL LIST

1. Coil—4 to 6 OHMS #29 or #30 wire
2. Coil leads
3. Tab shaft—1/16" brass
4. Armature .040" iron (butt solder to shaft)
5. Escapement pawl—.040" music wire
6. Escapement wheel—.032" bronze
7. "Up" spoke—.032" bronze
8. Frame—.040" aluminum
9. Thrust washer—1/8" brass tube
10. Slow speed screw block—micarta
11. Cam shaft—1/16" brass tube soldered on 21
12. Ignition switch contact—silver
13. Rubber hook—music wire
14. Advance cam—silver
15. Glue notch—(ignition cut-off)
16. Slow timer lead
17. Common switch lead (ignition)
18. Common switch arm—.006" brass
19. Common switch arm insulating washers
20. #4-40 mounting bolt
21. Escapement shaft—.042" music wire
22. "Right" spoke—.032" bronze
23. "Left" spoke—.032" bronze
24. Escapement spoke (4 needed—.032" bronze)
25. Retard contact (silver tip) No. 2-56 screw
26. Magnet frame—1/16" iron
27. Armature shaft—.042" music wire
28. "Down" spoke—.032" bronze
29. Spoke spacer (make 10)—.032" bronze
30. Armature return spring (hooked in 26)
31. Armature shaft
32. Advance timer lead (connect to 8)

"LAST Sunday's radio control contest was one of the best we've had this year. A total of 23 entrants did their best to outmaneuver each other for top score. Weather was all but perfect with a steady three mile wind. Eleven entries had their own transmitters (3 of them homemade) and the rest who were not licensed, took turns on Bill Cody's rig. Bill does a great service standing by with his transmitter, and helping the fellows shoot receiver trouble on the side. Harry Melford took first place but only by two points. Dick Schaeffer was high man in maneuvers but had less luck on the spot landings. Excitement ran high when one entry launched his ship for a test hop on what he thought was the practice frequency but discovered too late that he was on the contest frequency. The contestant flying at the time happened to be using Bill Cody's transmitter which is stronger than average. As a result, the contestant had control of both ships without knowledge of the fact. Things could have ended in a crash for the illegal ship except for the fact that it finally flew out of range and the safety timer dumped it in a plowed field; damage was minor."

If the reader has never witnessed one of these radio control contests he may have difficulty imagining the thrill that comes from competition that depends so much on flying skill in three dimensions. Those who have never seen one of these contests haven't missed much either, because such an event as described above has *never happened!* It's just an attempt to visualize what radio control could be in the near future if we could discover what is needed to shake you fellows loose from your lethargy. (All names above are fictitious and all that sort of stuff.)

Let's try to analyze why radio control today isn't at least half as popular as free

THE ORIGINAL RUDEVATOR DESCRIBED IN APRIL ISSUE HAS BEEN GREATLY IMPROVED — STUDY THE LATEST MODEL HERE

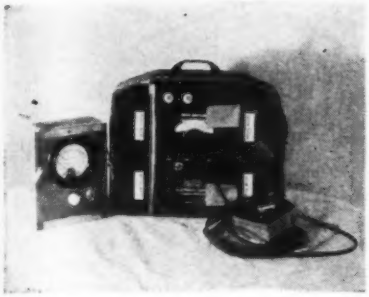


Fig. 2 Transmitter, control, and test meter

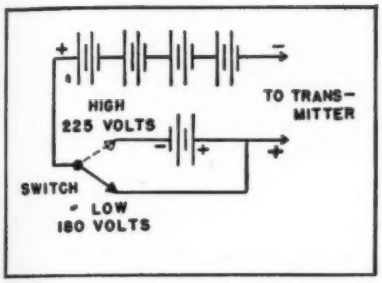


Fig. 3 Power supply circuit with "grabber"

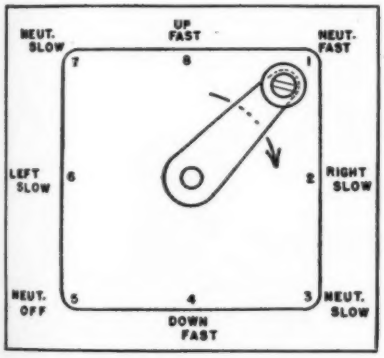


Fig. 4 Rudevator positions from control box

by H. H. Owbridge

flight. There are 3 basic problems which are more mental than physical: (1) the amateur license; (2) the equipment; (3) the knowledge.

PROBLEM 1—In two or three years the amateur license problem may well be taken care of by transmitters that are licensed at the factory so that no special operator's permit is required if used in the "as received" condition. This possibility was described in the April issue of M.A.N. by Ed Lorenz. But two or three years is a long time, and present receivers and parts of transmitters can be used on the contemplated 27.255 mc frequency when it arrives. For the present, the aid of a licensed amateur is the best solution to the problem.

Remember, all your testing and trials in getting familiar with the equipment can be done without a license if you leave the transmitter antenna disconnected. Then, when you are ready to try your first controlled flight, it should be a simple matter to find a radio ham enthusiastic enough to go out to the field with you. The honorable ham need only have (besides his operator's license) a station license for one transmitter. One transmitter can easily fill the needs of 5 "pilots" while you're getting started. The transmitter need only have 5 watts input. If it has more power than that you're using brute force, which isn't necessary. The ham, besides keeping you satisfied that you are abiding by the law, can teach you plenty about radio at first hand and help you find that loose wire in your ship. Our problem is to bring amateur radio to the model builder, not to bring model building to the amateur radio man. The ham is interested in communications; the model builder is interested in control.

PROBLEM 2—The equipment is really simple. If you are a ham that wants radio control, go ahead and build your own radio equipment and let a modeler build you an airworthy ship. But if you are (as is usually the case) a model builder with little or no knowledge of radio, there are many advantages in buying your radio equipment. It is agreed that the initial cost of present radio equipment is not low. But a good set will outlast many models. The electronics of these super-regenerative receivers is tricky. A ready made set has that extra reliability and long life that comes from well chosen components. Even if you count your time at only 50 cents an hour you can save money and discouragement and get into the air sooner where the fun really begins. The Beacon Electronics set can be recommended very highly from first hand experience. It is rugged and reliable. We mangled our receiver in a bad crash but the tube was unharmed, and when we carefully replaced the broken micarta and rewired the set, it performed better than when received from the factory. That is probably one of the most misunderstood points about radio control. The receiver (if it is the simple variety) is not delicate. It will stand a crash that will leave the ship in pretty bad shape. Both the receiver and transmitter (for all practical purposes) never wear out. By the time you are on your second set of batteries or second tube, you are a radio control operator of considerable flying time and experience.

We have also flown our ship with the Aero-Trol transmitter and receiver and can state that this equipment is also recommended as first class and a good investment. The user's choice need depend only on whether he prefers the lightweight of Aero-Trol with its more expensive and shorter life tube, or the heavier weight of Beacon Electronics with its longer life, less expensive tube.

Accidents are bound to happen. One must pay as much attention to detail as possible to avoid a crash, and even then the law of averages will determine your safety record. In 100 flights we have had one bad crash, one foolish crosswind landing, and at least 6 of those ordinary three point model builder's landings (one wheel, one wing tip and the nose). Only one accident bothered the receiver—that was the first one mentioned. Only the real crash and the crosswind landing required extensive repair which was completed by the next weekend. The snow shovel landings merely delayed operations for a few minutes.

We consider this a pretty sloppy safety record. But, then, we consider our utility factor (hours per month in the air) pretty high. There is a simple explanation for this. Our control loading (weight of radio control equipment per square inch wing area) is low. Think it over. Ours is about 0.016 oz. per square inch of area without even trying for light weight. This is what saves the ship, not our flying ability. If we had a heavy complicated control—one that required a lot of batteries to keep it going—our ship would be more nearly a total loss with every accident, minor or major.

It is easy to understand why the Good brothers stress simplicity, and why their ship is as old as it is. Get a simple radio control, operating in an airworthy ship and you have a pretty safe combination. On the other hand, if you get too original or fancy you need a junior genius badge to keep your ship in the air.

Few appreciate what radio control and its equipment will have to be in the future. It's hard to stop dreaming about a high speed job pulling out of a dive at two feet altitude, buzzing the length of the field and then pulling up into a series of vertical rolls. Yes, it's hard to stop dreaming about it, but stop we must if we are ever going to graduate from spectator to operator in quantity. Such a maneuver calls for high class proportional and simultaneous control, which will never be found this side of the military forces for less than about $500 and 15 lbs. Even if the weight of such a control could be brought down to 2 lbs., one would no more think of repairing it after a rough landing than he would think of taking apart his 21 jewel watch.

Some day this radio control business will boil down to a list of fairly well recognized procedures of a more or less standardized nature such as we now have for free flight and control line. While it is new, radio control design shows a lot of originality. That is good. It means that all possible types of controls are being investigated to determine their true worth. This process of elimination will soon evolve basic standards in the form of a few really successful controls from which the sport will develop. Originality of control types will some day all but disappear, and originality in model design and flying technique based on one or another popular type of control will take the spotlight.

PROBLEM 3—(The knowledge) is probably the largest single drawback to radio control at this time. There was a time when every gas powered model enthusiast had to look at a wiring diagram to hook up the ignition circuit on his first engine. Radio control is the same. Do it once and you know how. Simple routine tests keep your set in operating condition. Learning by doing is still the best teacher. You can learn all that is necessary about radio as you go. The radio is highly interesting, but controlled flight is the goal. One can do a lot of thinking about radio control on the sidelines and never get very far. Once you get in the air and learn what radio control really is, you start learning fast.

Our experience was like that. As prepared and ready as we thought we were, our first attempt at radio control almost turned out to be a haphazard fiasco. It's hard to keep calm on that first flight. The ship never cleared the ground on the first try because the motor was set to run too slow. On the second try it barely

(*Turn to page* 43)

THE DEAN

C
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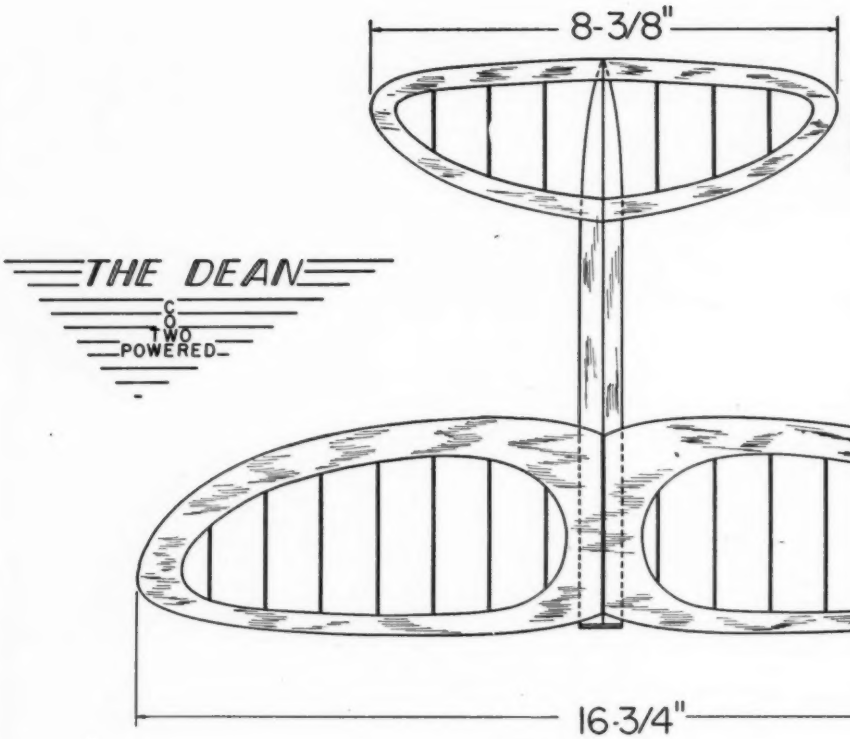
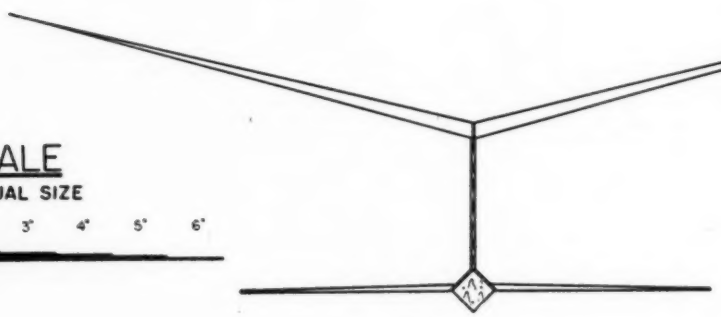
TWO
POWERED



MATERIAL

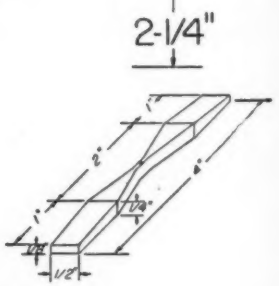
1 SHEET 3/32"X 2"X 36" WING & STAB.
1 SHEET 1/32" X 2"X 18" FUSE.& RUDDER.
PLYWOOD 1/32"X 1/2" sq. FIREWALL.
TISSUE, GLIDER POLISH, CEMENT.



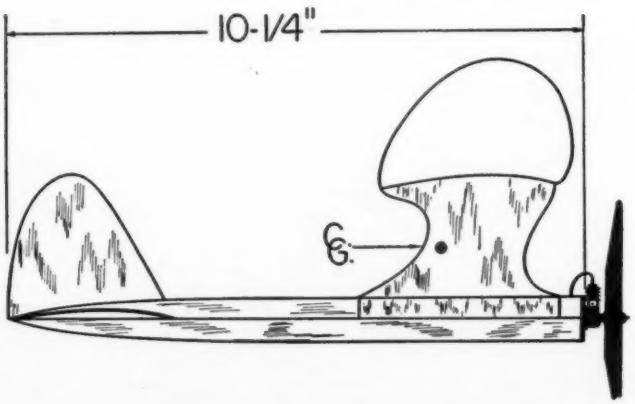
SCALE

1/3 ACTUAL SIZE

1/4" 1/2" 3/4" 1" 2" 3" 4" 5" 6"



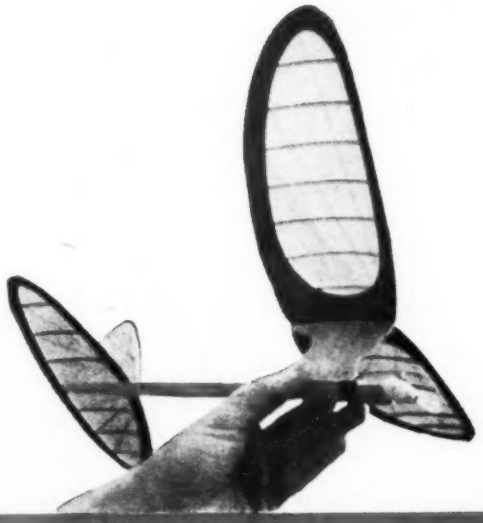
PROP DETAIL



F.V.B. EHLING

The Dean

By Frank Ehling



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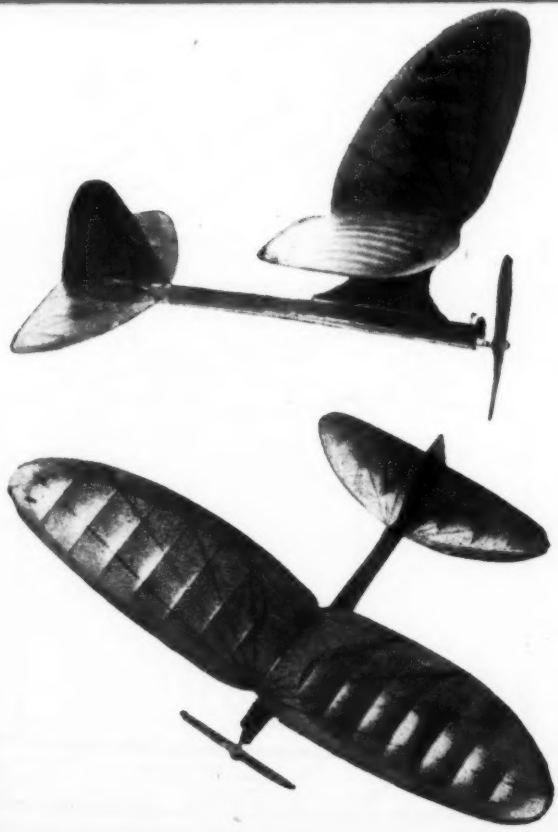
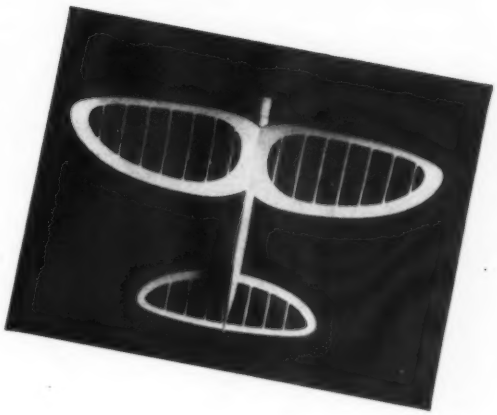




WITH a flip of the prop this little ship is on its way skyward, and when the power is spent it is a mere spot in the blue. That's right, it doesn't take a large engine and a large ship to turn in good flights one after another. With a little wood, tissue, cement, glider polish and sandpaper this ship is a snap to build. The wing is movable—and that makes it easy to balance. Ours flew the first time, so there isn't much to be said about adjusting.

The engine can be installed upright, and when gas runs out, the prop will stop; since the prop is so far below the wing, a dive will follow as the prop sets up drag. This effect can be used as a dethermalizer, or the engine can be installed inverted or on its side and will then free-wheel. A folding prop is good because this will reduce the drag even further and the glide will be improved considerably.

The *Ritz* type of wing which we used is not new; however, it is a good way to save weight and keep strength high. Be careful how the center of the wing is cut out as this wood is later used for the stabilizer. (Really economical!) The pylon is cemented to the wing and held in place on the fuselage with scotch tape; when the model is perfectly adjusted the pylon can be cemented.

This ship is a little large for its *Campus A-100* engine and it is wise to keep total weight to around a half ounce. This will give a steep climb and a lazy glide. The short tail moment gives the model the ability to circle tightly, just what is required for thermal hunting.

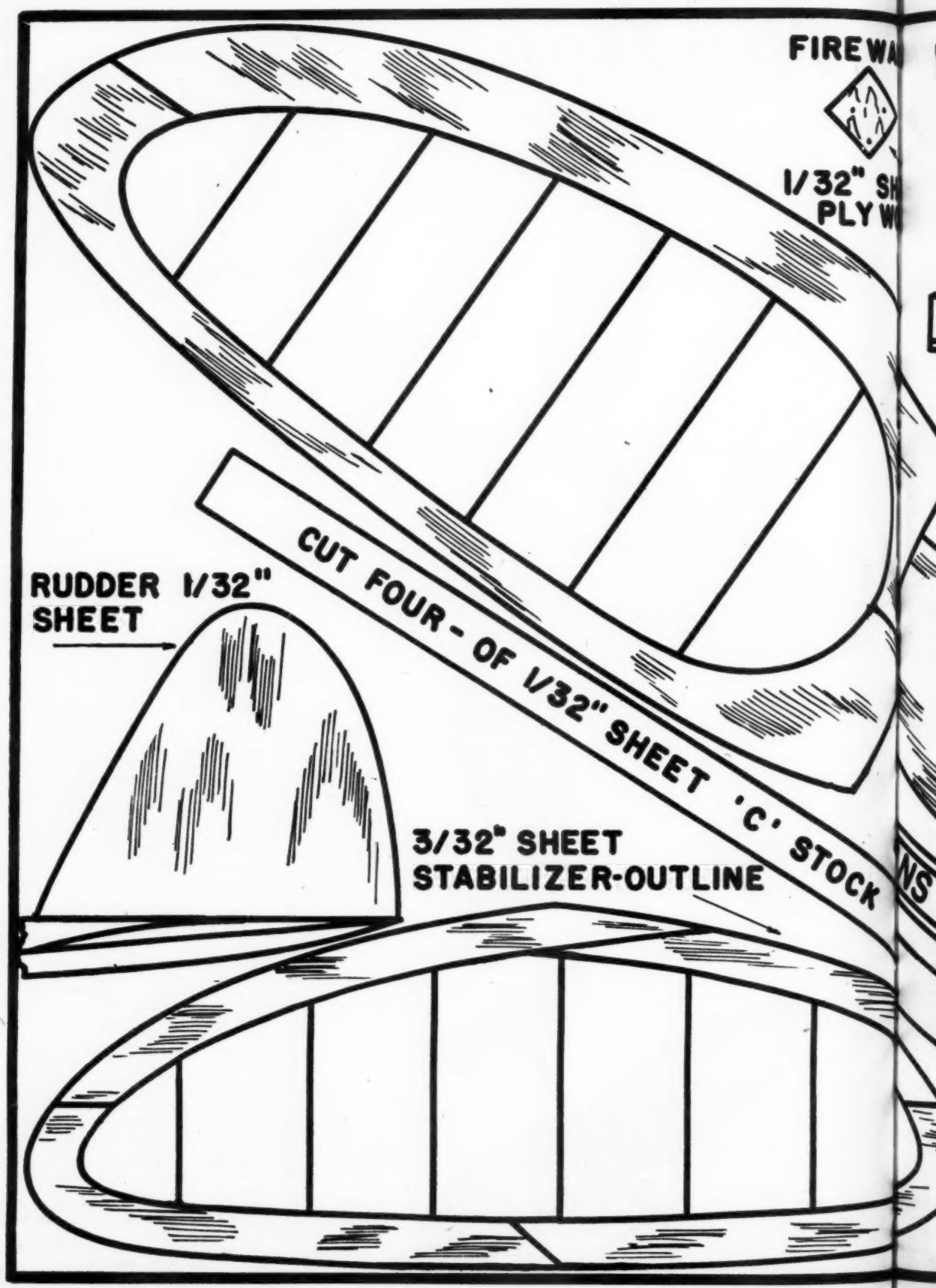
To start construction, cut the 4 fuselage sides from 1/32" sheet and cement together to form a square. Sand well and apply a coat of glider polish, then set aside to dry. Cut the rudder out of 1/32" sheet and sand. Make the pylon from 1/8" sheet (be sure to have the grain running as shown on plan) and cement in place the "V" that rests on the fuselage. Cut the plywood firewall from 1/32" sheet and mount the engine in place. Cut a hole in the side of the fuselage for the tank filler valve. Location of the tank will vary with each ship, but the tank should be mounted as near the nose as possible so as to get the wing well forward, thus making the ship easy to fly.

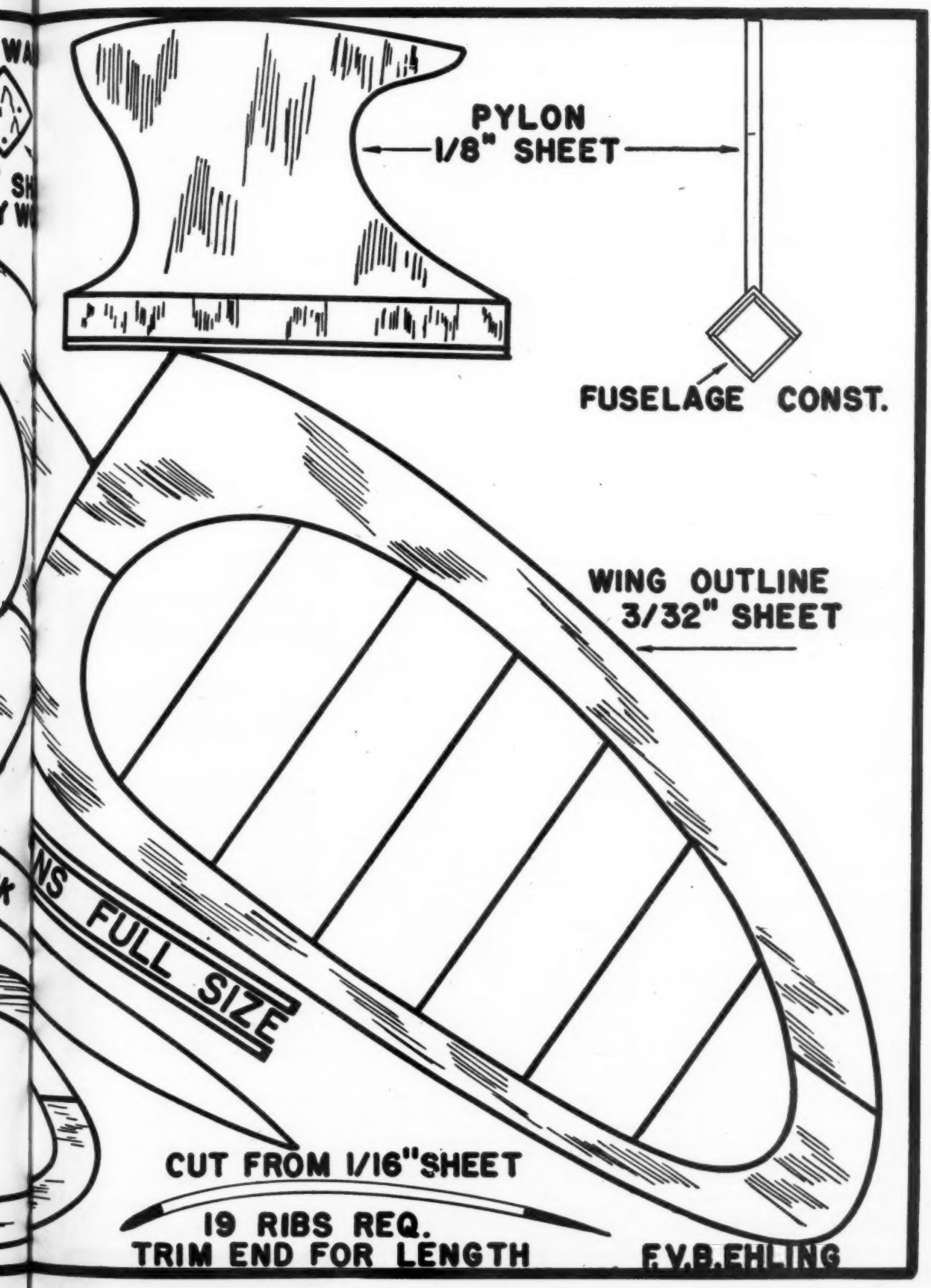
If your *Campus* engine is fastened directly to the gas tank, simply cut a hole in the firewall to pass the tank, and support the latter at the rear with a balsa block. Latest models of this powerplant have the tank and engine separate and connected with a thin copper tube. If you own this type, fasten the engine to the firewall with 3 common pins; clip them off 1/8" behind the wall, bend over and glue in place. Mount the tank as near the nose as possible; glue firmly in place, with the filler valve *down*.

The propeller is carved from the block shown and should be made of some medium weight wood rather than balsa.

Cut the wing outline, then cut out the center

(*Turn to page* 54)


FIREWA
1/32" SH
PLY W
CUT FOUR - OF 1/32" SHEET 'C' STOCK
RUDDER 1/32"
SHEET
3/32" SHEET
STABILIZER-OUTLINE


PYLON
1/8" SHEET
FUSELAGE CONST.
WING OUTLINE
3/32" SHEET
NS FULL SIZE
CUT FROM 1/16" SHEET
19 RIBS REQ.
TRIM END FOR LENGTH
F.V.B.EHLING

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(*Continued from page* 15)

be fitted, drilled, and the dowel may be put in position.

The fuselage is completed by building up the cowl front of 1/8" sheet half circles which have an inside diameter of 1-1/4". An imitation crankcase is also built up of 1/8" sheet. Drill a 1/4" diameter hole through the exact center of nose.

Lower rudder, air scoops, etc., are left until later.

EMPENNAGE—You will have to trace the elevator shown, reverse tracing, and re-trace; join the two plans (yours and the one shown on Plate 3) and build directly over plan. Both rudder and elevators are built up of 1/16" flat balsa. Because lightness was a goal, a plain flat section was used.

MAIN FLOAT STRUTS—These members are of the utmost importance. Make a template out of cardboard of the large front main strut. Trace around your template so that you have one layer of 1/16" sheet with the grain running horizontally for the center portion. Two outside layers are cut with a vertical grain. Cement these together, clamp, and allow to thoroughly dry. Then carve and sand strut to a streamline shape. Note the dotted line which indicates the bottom of the *bottom keel piece*. The center lamination of the strut should be cut out along this line. Now the finished strut is cemented in place to the lower keel piece. The strut is cut in like manner with a notch at the bottom to allow for attachment to float. Also attach rear strut, taking care that both struts line up as shown in side view as well as vertically.

WINGS—Two of each rib pattern shown are cut from 1/16" sheet. Pin spar in place over plans and cement ribs in position. Note that the root rib is tilted toward the tip 3/32" to allow for a dihedral angle of 1" beneath each tip. The leading and trailing edges are cemented in place and allowed to dry. Carve and sand leading and trailing edges to conform with the airfoil. Lastly, cement the small gussets in place at the root and go over all joints with an additional spot of cement. Give wings a final light sanding.

SPONSON STRUTS — Build these 2 struts up with layers of 1/16" sheet. Note the small sectional view on Plate 1. When finished, carve and sand to streamline crossection and cement in place at the designated spot on the bottom of each wing panel. They should fit nicely over the fourth rib from tip, and they must hang exactly vertical from both side and front view.

FLOATS—First we carve the tip floats, or sponsons, from firm but lightweight balsa. Split these down the center and hollow to a thickness of 3/32". Cement halves together again and give a thorough sanding. One coat of wood filler well rubbed in will form the base, with additional sanding, for a good color doping. These floats may now be firmly cemented to the tip float struts. Fair the point of attachment between struts and floats with cement.

Built up floats were at first used on the model illustrated. These, however, are a bit difficult to build. In addition, solid floats were found to be much stronger, better appearing, and *no* increase in weight is caused by the hollowed all-balsa floats.

The main float is built up in the same

(*Turn to page* 40)

ART HASSELBACH says:

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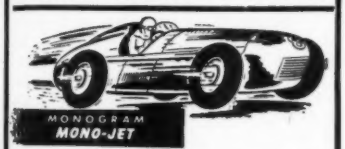
HOT SHOT . . 60c



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MONO-JET . . 85c

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Atomic	1.00	Terrajet	1.00
Hot Rod	1.00	Hot Rok	1.00
Midget	.85	Cannon Ball	.60
Flash Rocket Plane	.75	Supersonic Streak	.75
Gadget Plain	1.00	Gadjet Painted	1.50
Rocket Jet Plane	1.00		

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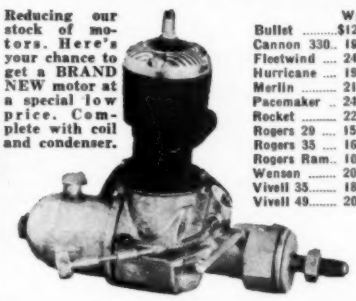

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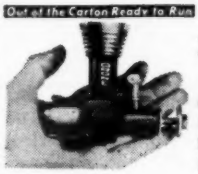

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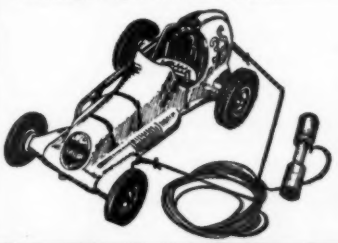

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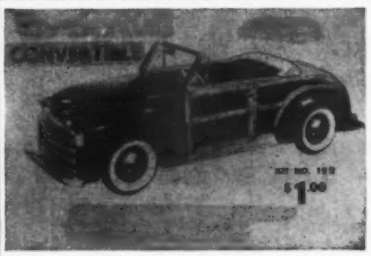

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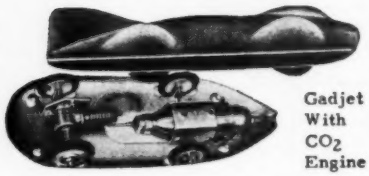

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manner as was the fuselage except that no side keel pieces are used. The construction used, and much preferred by the writer, for such modern vee-bottom floats omits the side keels. The float is very light and strong, and no difficulty should be encountered by any builder who has finished the conventionally constructed fuselage. Briefly, pin the top and bottom float keels in place and cement half-bulkheads in position. When dry, remove from bench and cement all remaining bulkhead halves in place. The 1/32" x 1/8" stringers are next; add 2 at a time using ones corresponding on each side. Do not fail to include the important bulkhead F-D as this member forms the step.

The float bottom is covered with 1/32" sheet balsa. Cut to outside shape with reference to the top view (refer to all Plates for a full view of float). You will be amazed at the sturdiness of such a light float construction. Do *not* dope the bottom of float yet.

COVERING—A light grade of sky-blue tissue was used on the author's model. Tissue of the color intended is recommended because color doping is thus facilitated. The principal thing to remember in covering is always to have the tissue grain running the length of the part being covered. Wingtips are best handled with a small piece of tissue to each side. The remaining portion of each wing panel can be covered with one piece to each side. Mark and cut a small hole where the struts are attached to wing. Use clear dope for best results. This adhesive need only be applied on the outside edges of part being covered. The only exception to this generality is in the case of concave surfaces (the fairing of the wing roots, for example). Actually, covering is one item of model airplane building that can be mastered only by practice; some think it difficult, but patience and the desire to do a neat job brings good results. Small pieces are best used on round surfaces like the fuselage. Where 2 pieces overlap, as will be the case on the fuselage, it is *not* necessary to spread adhesive on the joining ends of tissue. In fact, better results will be obtained if an overlap of 3/16" is allowed. Tail surfaces are covered with a single piece to each side.

Spray all covered surfaces with water; watch all parts for signs of warping. The main float requires a bit different procedure from the other parts: cover top of float with tissue, but do *not* spray with water until you have rubbed in (with fingertips) one coat of dope. Rubbing in this coat will prevent warping. Then spray tissue-covered float top.

After the water spray has tightened all tissue and is thoroughly dry, you can brush on a coat of thin clear dope. Again watch for warping. In the case of the wing panels it is advisable to dope only the space between 2 ribs; then invert the panel and dope other side in corresponding place. This method, followed through, will produce excellent results. A second coat of clear dope will produce a surface that is ready for color dope; this, however, comes after assembly.

ASSEMBLY—The elevators are cemented in place between the first stringer above the side keel piece and the sheet balsa support cemented in place earlier. Small bits of tissue may be used to fair in the elevators. The rudder is cemented directly to the top keel piece. This rudder must be exactly aligned or bad results will follow. Cut the lower rudder from 1/16" sheet, sand smooth,

and rub in 2 or 3 coats of clear dope. Give a final sanding and cement in place.

The nose should be covered with bond paper between bulkheads 1 and 2 if an authentic appearance is desired. The small raised portions over the guns (see dash lines on side view, Plate 2) are duplicated with soft balsa which is sanded to streamline shape after it is cemented in place.

Carve the 2 airscoops from soft balsa, sand smooth, and attach.

The wing panels are cemented carefully in position. Note that a small amount of positive incidence is provided for on the plans. If your building has been accurate you will have no trouble achieving the correct incidence. Block up the fuselage and wingtips so that 1" dihedral will result.

The main float is attached by cutting away a very small portion of tissue where the struts are cemented to the

(*Turn to page* 71)

World War I

(*Continued from page* 25)

1,788 of these D I type engines were produced.

Next in the *Mercedes* line was model D II, which saw considerable war service in both two seaters and in early single seaters. This engine was also a 6 cylinder in-line type with 125 mm bore and 150 mm stroke. Little more than an enlargement of the 100 hp model, the D II nevertheless delivered 120 hp and 886 examples of the type were constructed during the war.

Mercedes D III

By far the most universally used *Mercedes* engine was the D III, the 160 hp model that powered so many of the pursuit aircraft made famous in fact and in fiction. Most of the Albatros line used this engine; the Fokker D.VII started its career with one under the hood, as did the Pfalz D.III, D.XII and a host of other aircraft.

Designwise, the D III was an enlargement of the D II model and had a bore of 140 mm and 160 mm stroke. It was rated at 160 hp. At its normal speed of 1400 rpm, however, it developed a BHP of 162.5. Compression ratio was 4.5:1 and normal BMEP, 102 lbs. per sq. in. Fuel consumption was 0.58 pt. per BHP/hr, and oil, 0.031 pt. per hour per BHP. Total weight of this engine was 618 lbs. dry, that is without water, oil, fuel, propeller hub or exhaust manifold.

Each of the 6 cylinders was built up entirely of steel, with the pressed steel water jackets welded in place and the valve pockets welded and screwed into the cylinder heads. The pistons were made with concave heads machined from steel forgings, which were first screwed into the cast iron skirts and then welded into place. Four piston rings were provided, three above and one below the wristpin. The pins were supported on lugs machined into the bottom of the piston crown.

Connecting rods were H-sectioned with floating cast iron wristpin bushings. The crankshaft was balanced and rode on 7 main bearings. The crankcase was cast with integral housings for the lower mains and provided with lugs for mounting it to the upper crankcase and holding down the cylinders by means of long bolts.

Single inlet and exhaust valves were provided for each cylinder and were interchangeable. The valves were operated by an overhead camshaft. The valve rocker arms worked through slots in the

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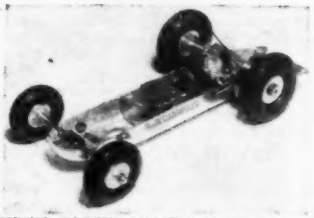

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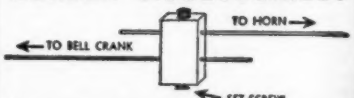

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camshaft casings, which were provided with felt packing strips and baffle plates for retaining oil in the camshaft casings. Valve lift in the 160 hp *Mercedes* was 0.440 in.

Carburetion was supplied by twin-jet dual carburetors, both of which were enclosed in a cast aluminum water jacket. Each carburetor fed 3 cylinders by means of a branched steel induction tube bound with asbestos cord and adhesive tape. Bore of the main jets was 1.473 mm, and the pilot jets .558 mm. The oil pump was a multiple plunger type attached to the bottom of the rear oil sump and the base reservoir. Ignition was provided by 2 Bosch Z.L.6 type magnetos driven by the camshaft vertical driving shaft. Each cylinder was fitted with 2 Bosch three-point plugs. Ignition was timed at 30 deg. E., and the magnetos ran at 1.5 times engine speed. Firing order was 1,5,3,6,2,4.

The water pump was situated above the magneto drive. A standard *Mercedes* air pump of the single plunger type was driven from the front of the camshaft. A distinctive feature of the *Mercedes* D III engine was its "half compression" gear. The half compression gear allowed the engine to be turned over more easily, a feat which was pretty difficult for the average mechanic. Briefly, the gear consisted of a handle on the rear of the camshaft which, when turned, slid the camshaft longitudinally backward in its bearings, bringing into operation a small cam in the mid neutral axis of the exhaust cam. When this half compression cam was drawn into line with the roller end of the exhaust valve rocker arm the latter was given a slight lift. At that position the exhaust valve opened 12 deg. after bottom dead center on the compression stroke, and closed 44 deg. before the top dead center.

The *Mercedes* DIII engine was the basis of the remainder of the W.W.I *Mercedes* types. These others will be described in this feature next month.

Control That Ship

(*Continued from page* 33)

cleared the ground at the bottom of a loop because of poor trim. On the third try we had real radio control for the first time (but not until I remembered to turn on the transmitter!). Oh well, if everything worked like a push button machine you could hardly call it a hobby.

If you buy a Beacon Electronics set, watch that instruction book carefully. It took a little time to learn how to operate our set with skill. We improved the reliability of our receiver a great deal by putting an arc suppressor condenser across the relay contacts. We also improved the transmitter by going to a 180 volt external battery supply. Those little 67½ volt internal batteries are expensive for what little you get out of them. We also put a 45 volt boost on the transmitter as a "grabber" in case the ship went out of range. The "grabber" will be explained later.

Anyone with 100 radio control flights can think of lots of suggestions that a beginner will discover soon enough. The best way to handle the knowledge problem is to start in working with the equipment you need to fly. Don't take a course in radio because that will teach you to be an electronics engineer and you don't have to be one of those to handle this stuff. The simplest book on radio is all the introduction you need. Articles that have appeared in this magazine have

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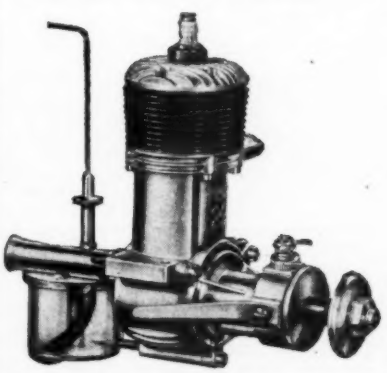

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Here's the latest Rudevator: The heading photo shows it in hand for size. We have been working hard on it since it was first introduced in the April issue and now it has acquired power control and other tricks. Rudder, elevator and engine control (including cut-off) all in a one oz. unit requiring only the turning on and off of a carrier wave to operate! You'll have to pardon our pride if we seem to brag about it a little. Thanks to the original invention of the rotary control surface by Bill Rhodes, we've got more control packed into a cubic inch than was ever thought possible.

The present version of the Rudevator came about as a result of flying experience. We became tired of seeing our ship spiral down every time we touched the rudder. We knew we were using too much power and too much rudder but were reluctant to reduce either. Less power would mean a sluggish climb, and less rudder would mean less control. We started to work on the problem by changing the position at which the Rudevator was stopped for rudder. Instead of stopping it in the vertical position we began to stop it more and more over on its side. We ended up by stopping it 60° from vertical, which gives us theoretically 66% up elevator with 33% rudder. In effect we have simultaneous rudder and elevator in turns.

Of course we had to increase the Rudevator area to get back the original amount of rudder we were using. That helped a lot, but it wasn't a complete solution. The spiral was more delayed than it was deleted. What we needed was less power in turns. This meant a 2 speed control for the engine. For some time we couldn't see how to do it without adding an extra relay. Then the light dawned. What good was high power in turns if you couldn't even complete one circle without heading for the ground? All right then, throttle back in the turns. Any flight instructor might consider this poor practice in a real airplane but it was just what we needed. So we built 2 speed points on our *Super Cyclone* (a simple matter) and designed a cam switch on the Rudevator to give us the configuration we wanted.

Now our turns are as flat as we want them and yet we can still spiral down by holding rudder for about 2 circles or going into a turn at high speed after using down elevator. But that isn't all. We were half surprised and half scared one day to find we could do snap rolls. Well, it was so fast it looked like a snap roll, but some observers may have termed it a barrel roll. Sometimes it is hard to tell where a barrel roll leaves off and a snap roll begins, but there certainly was no doubt that it was a roll. The only trouble was that we hadn't built the main beam for such a violent maneuver so we got it down in a hurry to see if there was any permanent damage. The wing looked all right from the outside but we still wonder if it didn't fail a little inside. We've been reluctant to uncover the wing to find out.

This 2 speed control comes in very handy for cross-country work. There is nothing so annoying as a radio control job that insists on climbing while you're trying to fly cross-country or practice maneuvers. The 2 speed control plus the down elevator gives pretty good altitude control without having to spiral the ship down every few minutes. Our control surface now is just twice the size it was previously, or 14 sq. in. (2 sq. in. per foot of span). The control surface is now made of 1/16" balsa sheet, paper

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covered, instead of the previous celluloid. We've decided that the rotating surface looks more intelligent than expected so we've stopped trying to hide it. Also, for rotary propulsion we now use full length ailerons instead of the previous protruding tips.

The drawings of the Rudevator mechanism (Fig. 1) along with the parts and material list should be self explanatory. As noted, the unit is shown in the neutral after "up" position. The advance ignition cam (14) is touching the ignition common switch (18) and therefore completes a circuit thru the mechanism frame (which is not ground) to the advanced ignition points on the engine. If the cam (14) were away from the common switch (18) the advanced circuit would be broken and the retard circuit would be made from switch (18) to the retard screw (25) which is connected to the engine retard timer points. The glue in the notch (15) opens both circuits and cuts the engine.

The control box configuration is shown in Fig. 4. We take off and climb in position 1 (full power-neutral), cruise in either position 3 or 7 (part power-neutral), maneuver in positions 2, 4, 6 or 8 (part power in left and right, full power in up and down) and cut the motor in position 5 (neutral-off). But remember, the control box has no markings since up is up and right is right, and so forth. This way it's a simple matter to turn the box in your hand to synchronize with the Rudevator.

Back to Fig. 1. A conventional type of escapement (driven by a loop of 1/16" rubber) is used having a 4 point escapement wheel (6). Forty-five degrees of motion each time puts one and then another of the escapement spokes (24) in the path of its corresponding control spoke (7, 22, 23 or 28) on rotary tab shaft (3).

Here are three suggestions that will really improve your Beacon Electronics transmitter (or any other low power transmitter used for radio control for that matter). Our transmitter proved to be a first class item in the "as received" condition, but here is what a few dollars and a little more work and wire did to it. Fig. 2 shows the reworked stock transmitter along with our special control box (just a simple rotary switch) and our faithful test meter. The meter is a separate money-saving item that can be used for all measurements required for radio control—but that's another story.

The recommended power supply for the Beacon transmitter is 2 Burgess XX-45 "B" batteries. The only thing good about these batteries is that they fit in the transmitter box. For very near the same price one can buy batteries that will last not a matter of hours but months. These are Burgess 5308 batteries or their equivalent. Four of them stack very neatly around the transmitter box and are held thereto with a couple of shortened trunk straps. A cheap handle has been added to the top of the transmitter box as a handy grab-all. The wiring diagram for the power supply (including a "grabber" which will be explained later) is shown in Fig. 3. Two screws are left out of the rear cover of the box so that two leads can be run in to the proper connections inside.

The 45 volt batteries are connected in series so the total adds up to 180 volts. The 3A5 tube is conservatively rated at 135 volts but doesn't mind the extra pressure in the least. A spare 3A5 is stored inside the box in case the one in use should get tired some day. All the screws are removed from the front of the box

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1/16x1/4.....10, 5c | 3/16x1* ....3c ea.
1/16x3/8......8, 5c | 1/4x1/4*........4, 5c
1/16x1/2......6, 5c | 1/4x3/8* 3, 5c
3/32 sq.....12, 5c | 1/4x1/2*........2, 5c
3/32x3/16 10, 5c | 1/4x5/8.........2, 5c
3/32x1/4.... 6, 5c | 1/4x3/4* ....3c ea.
3/32x3/8.... 5, 5c | 1/4x1* ....4c ea.
3/32x1/2.... 4, 5c | 5/16 sq.*....2, 5c
1/8x1/8*.... 12, 5c | 3/8x3/8* .... 3c ea.
1/8x3/16* 10, 5c | 3/8x1/2 ....4c ea.
1/8x1/4*.........6, 5c | 3/8x3/4* .... 5c ea.
1/8x3/8*....... 5, 5c | 1/2x1/2* .... 5c ea.
1/8x1/2*.........4, 5c | 1/2x3/4* .... 6c ea.
1/8x1*...........2, 5c | 1/2x1* ...... 7c ea.
5/32 sq.*....5, 5c | 5/8x5/8* ......7c ea.
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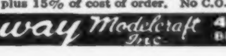
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and a good grade of tape has been substituted as hinge and fastener. This way we figure it would take about 10 seconds to replace the tube if and when that fatal day arrives. We check the tube periodically by taking it down to the local radio store. After 6 months it still tests brand new! We have yet to see one blow.

The second suggestion for improving your low power transmitter is the addition of what we call a "grabber." This is merely an extra "B" battery as a reserve in case the model goes out of range. This battery is another Burgess 5308 (or equivalent) stored inside the transmitter box along with the "A" battery. Almost any type of single pole-double throw non-shorting switch can be employed.

Now let's see what this extra two dollars worth of equipment gets us. Without it we could never be sure what the actual range of our low power transmitter really was without flying the ship away until it refused to come back. With the grabber it's different. At least 4 times to date we have seen our ship set off into the blue with that unconcerned free-flight look. Obviously it had crossed the threshold of signal strength and was on its own. Normally this would mean a rush for the cars and the usual chase. Not with a grabber! A flick of a switch and your transmitter is on high. That extra 45 volts reaches out a little farther and gently but firmly swings the nose of your ship around toward home. Once it is heading home the transmitter can be switched back to normal power. The extra voltage for short periods doesn't hurt the tube or de-tune the transmitter enough to worry about. Once an extra strong thermal got our ship and we fought for it with the grabber for 10 minutes. It was a good fight but the thermal finally won. However a check on the transmitter later showed it was none the worse for the workout. One may not need a grabber for 10 or 20 flights, but when you do need if it's nice to have it there.

The third suggestion for your transmitter doesn't concern the transmitter directly but rather that all important accessory, the antenna. Take time to make it right. We should know after the many times we spent running around looking for a soft spot in the ground to push poles into. The main advantage in fastening the antenna to the transmitter lies in the fact that the area off the end of the antenna is really pretty dead. It's nice to be able to swing the antenna around when the ship gets low in the dead area. Make a "Y" frame. It doesn't have to be fancy or chrome plated. Broomsticks or one inch square pine are good enough. Block them together well at the intersection or make a folding joint to simplify the transportation problem. Make the base support from the end of an apple crate or any flat piece of wood a foot or two square. A piece of gas pipe makes a good antenna post holder. What's going to keep it from falling over? Why, the transmitter, of course. With that heavy duty power supply it makes a perfect dead weight ballast. Ask the Good brothers.

To sum up, we make the following suggestions: for those who would like to get in the air with a degree of control we have described, but who feel the Rudevator is too intricate to build by hand, here is the best advice we can offer. Get in the air with a commercial radio and rudder combination alone. This will teach you 90% of the tricks to the trade. Then, if there are enough of you who want this control bad enough we'll get it to you even if we have to build them by hand.

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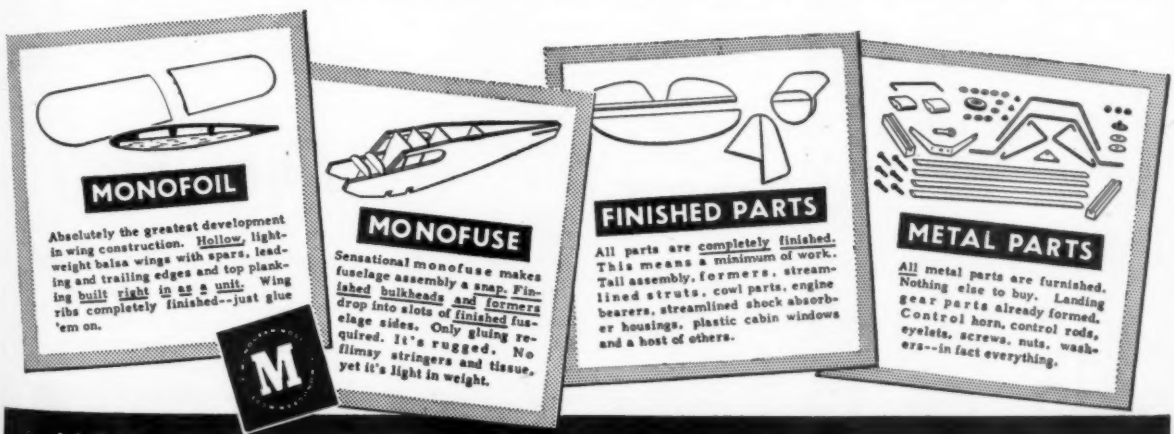
Get the Piper Cub at your dealer. If no dealer, order from Monogram. Add 25¢ for packing and postage for shipment.



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Plane on the Cover

(*Continued from page 21*)

the *Streak* wing is designed to provide good stall characteristics without the necessity for such drag-producing devices as wingtip slots or a highly cambered tip section. The ailerons maintain their effectiveness right into the stall, which begins at the root and provides ample stall warning indication.

The fuselage is built up on ten main frames with a semi-monocoque structure designed to require a minimum of longitudinal members. The seating of the two crew members is in tandem with the bubble canopy fixed to the fuselage. Small hinged segments on the port side permit entrance to the seats. The canopy is designed with a wing airfoil curve to provide a minimum of drag.

The landing gear is of conventional tricycle design with the main gear folding inwardly into the wing and the nose gear retracting aft into doors which seal the opening. The nose gear, however, required special trunnion fittings and supporting members to dispose it forward as much as possible and yet permit installation of the engine in the nose, a difficult engineering problem. Air-oil shock absorbers are used and hydraulic brakes are fitted. The nose wheel is steerable and Hayes wheels—of a size used as tail wheels on several military aircraft—are fitted.

The tail surfaces are of conventional full cantilever design with metal covered rudder and elevators. Dual controls are fitted and the aerodynamic layout of the airplane is so well-balanced that it may be flown from either front or rear seat without any change in the stability or control characteristics, indicating an unusually long range of center-of-gravity travel. The fuselage contains a baggage compartment with a capacity of 9 cu. ft.

Power on the original model is provided by a Continental C-85-12FJ rated at 87 hp for takeoff and 63 hp cruising at 2400 rpm. This engine is a four-cylinder, air-cooled, horizontally opposed type. It uses 73 octane gasoline and SAE 30 or 40 oil. It drives either a Sensenich "Skyblade" of 6 ft. diameter or a controllable pitch design of any of several standard makes. Engine accessories include a Delco starter and generator and a Willard battery to supply the 12-volt electrical system. A newer version of the ship is now offered, powered by a Continental C-125-2 six cylinder engine developing 125 hp for takeoff and 98 hp for cruise.

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"World's easiest coil on batteries. Has built-in mounting lugs with screws. No soldering! No extras."
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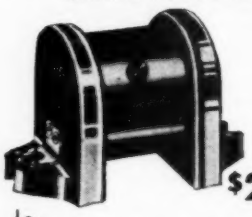
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Throughout its design, simplicity of structure was held of major importance for mass production. Wisely, the designers decided early that the only way in which their airplane could be made to sell was to design it for simplicity of production, thereby insuring shop economies. With the aid of veteran Curtiss shop men and tool designers, the various production jigs and fixtures were designed right along with the airplane so that changes in the airplane could be made which would reduce special production tooling requirements—a far cry from the usual practice of designing an airplane, then turning it over as one big headache to the tool design department!

The Aero-Flight *Streak* AFA-1 (85 hp) has a top speed of 175 mph and cruises at 165 mph, believe it or not! (This is the same engine used in the Aeronca *Chum*, Cessna 140, Luscombe *Silvaire* 8-E and the Culver V, all of which cruise at 120 mph or less!) It lands at 65 mph, has a rate-of-climb of 950 fpm., a service ceiling of 17,000 ft. and a range of 750 miles! The *Streak* AFA-2 (125 hp) has a top speed of 203 mph and cruises at 192 mph—faster than a Douglas DC-3! This version has a 1500 fpm. rate-of-climb, a 20,000 ft. service ceiling and a range of 800 miles! Assuredly here is fighter performance in a personal aircraft.

After completion of early test flights, the company moved its entire facilities to Long Beach (Calif.) Airport. Here plans are going forward for mass production of the sleek craft at the rate of 10 a day following completion of certification by CAA. The Company feels this production rate will insure the low prices they have set on the model, a price competitive with the best of the more conventional lightplanes which lack the extra-plus-super performance of the *Streak*. For the 85 hp De Luxe version (constant speed propeller, fuel injection, starter, generator, navigation lights, dual controls, shock-mounted instrument panel, two-way radio and other equipment) Aero-Flight has set a price of $3,990, with the 125 hp model running slightly higher.

Events of the past few months coupled with delays in CAA certification have held the Streak from production and off the market shelf, although inquiries and hundreds of firm orders continue to mount. Whether or not Aero-Flight can continue to hold that price tag against rapidly increasing costs in materials and labor throughout the nation is a question not even J. K. Nagamatsu, President and Board Chairman, can answer accurately. The company has never planned to offer the lowest priced two seater on the market but has, instead, attempted to provide the highest possible performance to the sport plane enthusiast and in that it has succeeded in full measure.

But while waiting for certification and the start of quantity production, H. T. Nagamatsu, vice president and chief engineer, is not letting his designing hand grow stale. He's hard at work on an equally top performing four-place all metal job and Aero-Flight is seriously eyeing the four-place field as the real market in the future for high speed personal air transportation. Four-place or two-place, however, these Japanese-American fighter plane designers have cut a wide swath in the staid lightplane field and opened up an entirely new vista of high speed in this decades-old "put put" field, which may revolutionize the private pilot's thinking in the years to come.

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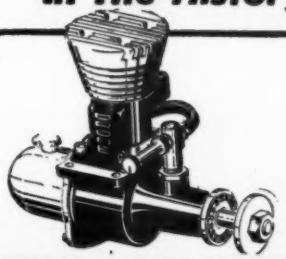

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Keep Your Motor Quiet!

(*Continued from page* 19)

gets outside, the push is gone. After all, the high pitched whine is all you need to kill.

Los Angeles Park Department tests show that the maximum decible loss is not great with a muffler (that's bad), but the intensity of the sound is cut down considerably (that's good). If you can cut your engine noise down to within a 200 ft. range, nobody will ever kick you off your flying field for noise.

Now, between the exit holes and the expansion chamber you must have some barrier to keep the sound waves from getting out too soon and to delay the gases. This can be done by putting in a baffle which has a few holes drilled in it (same story as on the exit holes); or you can use heavy steel wool which is much simpler. If you really want a quiet muffler, use a baffle *and* steel wool. With this combination you can open up the baffle slightly as the steel wool will deaden the sound more efficiently. Think of the steel wool as a filter and you won't be far off. It actually diffuses the sound waves and takes the bark out of them. Be sure to pack it tightly—don't be afraid to use lots of it. Just keep it clear of your engine piston, and stuff it in there.

Okay, here is the story in outline form:

Four ways to insure a good muffler:

1. Good-sized expansion chamber.
2. Partially closed baffle.
3. Plenty of heavy coarse steel wool.
4. Small exit holes for the exhaust gases.

If you combine these 4 items into your own design, and use just a little common sense, you should be all right.

We show here two common home-built jobs used around the Los Angeles area:

MUFFLER "A" is an experimental type which does not use a baffle, just steel wool. It is not designed to cut down too much of the noise—just the real high notes are stifled. However, this muffler is surprisingly quiet from a distance of 200 ft. and can scarcely be heard at 200 yards. The great advantage this muffler has is simplicity of design and construction. Any twelve year old can make one of these in about half an hour. Simply take a piece of 1 to 1-1/2 inch I.D. soft aluminum tubing 2" to 3-1/2" long (depending on the size motor used), and fill the inside with sand. Now squeeze each end flat in a smooth-jaw vise. Drill #60 Exhaust Exit holes along the outward edge of the muffler, and across the rear. Since you have to drill both top and bottom, drill right on through from the top. Next mark off the size of your engine's exhaust stack on the inboard edge of the muffler, and using a #30 drill or rotary file cut away the area for the exhaust stack. Dump out the sand and pack in your coarse steel wool.

Simple! It works, too! If you don't have enough holes and are creating too much back pressure your engine will be hard to start. If you happen to have too many your muffler will be a little noisy. To plug up the holes use plain soft aluminum and a hammer, and beat the aluminum into the hole. It will wedge in and stay permanently after the first run.

The original muffler of this type was used on a *McCoy 29* which produces a high speed whine audible for several blocks under normal operation. With this muffler the 29 still puts out plenty of noise, but it was just enough subdued so that it did not carry very far. With the very coarse steel wool this muffler was okayed

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2.6 OZS. WEIGHT 2.7 OZS.
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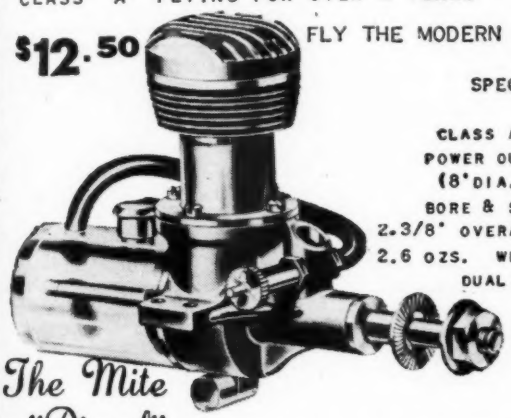
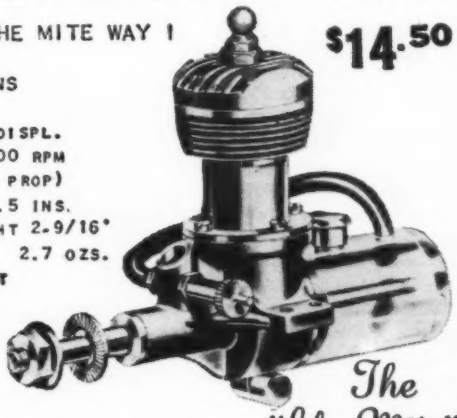


The Mite "Diesel"



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Dia.	Pitch
7	*6 **8—9—10½
8	**6 —8—9—10½
9	6 —8—9—10½—12
10	6 —8—9—10½—12
11	6 —8—9—10½—12

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for use by the Los Angeles Park Department official at Crystal Springs. Yet there was no loss of power output and the engine was just as easy to start with the muffler as without. The completed muffler weighed 1/2 oz.

MUFFLER "B" is also a "quickie." Find a piece of magnesium heavy wall 3/4" I.D. tubing, and purchase two 3/4" door-pulls (for sliding doors) at your hardware store. Cut the magnesium tube to the proper length for your engine (2-3/4" long for .30 engines up to 4-1/2" for .60 engine). Smooth the edges and press in the baffle. Baffle is made of .064" aluminum, drilled with #40 drill to allow exhaust gases to go through. See sketch for details of baffle.

After installing the baffle, drill exhaust exit holes as shown on plan, preferably using a #60 drill. Now pack the outboard section with very coarse steel wool.

Mark the cutout for your exhaust. (Incidentally, if you happen to have an old stamp pad around the house you can use that to get a temporary impression of your exhaust stack on the side of the muffler.) Using a drill, file or rotary cutter, clean out the exhaust stack cutout and file to fit. Press in door-pulls.

The same diagnosis of engine starting or not starting according to back pressure applies again. Just add holes if it starts hard, and plug them up if it is too noisy.

A good muffler will scare you to death at first, because you will hear all sorts of noises you never heard before. The rods clank and the prop makes a terrific racket. The crankshaft whirrs and sounds like it is coming out the side of the crankcase, but don't worry, you can't hear these sounds very far away and the parts won't come flying out.

Credit for the initial push behind the "B" muffler should go to Bob Enright (Hobby Bobby in Hollywood) and George Walters (George's Hobby Shop, Glendale). These two enterprising fellows rounded up the magnesium tubing, the door-pulls and various other parts and showed the fellows how to fix up a muffler which would pass the rules set up in Los Angeles City Parks. At the present time this type of muffler is in most general use among modelers who do not purchase a kit job or readymade muffler.

There are nearly as many different types of silencing devices for engines as there are engines. If you care to delve into the mysteries of exhaust manifolds, tubular mufflers, spherical mufflers, geodetic mufflers, etc. there is probably a very good book on the subject in your nearest public library.

We feel that mufflers are a necessary evil in some localities. In others, however, they will be an absolute blessing, and it is for this one fact that we also feel that mufflers are closely tied into the advancement and scientific progress of model aviation. Anything that keeps 'em flying is good for the hobby, and mufflers will do that little chore very nicely.

In spite of this, there are plenty of die-hards who insist that they don't want to use mufflers. It reminds us of the arguments for and against folding props.

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Try This Dethermalizer

(*Continued from page 23*)

as not to drive the pin down too far! Driving the pin down allows the valve to be closed with the knob farther out—it also makes it easier to file notches in the knob.

TAKE IT EASY AS YOU SOLDER THE ARM—After determining the approximate adjustment of the valve, pull the timer out with valve closed and apply a wet rag (held snugly with a rubber band) to the piston rod to prevent burning the leather or the cement on the plunger. Flow a small amount of solder on the junction of the rod, the nut and the arm. These parts must be as a unit if adjustment of the valve is to be accurate. Have the soldering iron hot and do not make a "chewing gum" job of the soldering. Remember the 4 rules of good soldering: clean metal, good flux and solder, hot iron, and *holding the iron on the work until iron, solder and work reach the same approximate temperature.* Poor soldering frequently results from violating the last rule. File notches on the knob like gear teeth so it can be adjusted through the slot in the race or guide after it is mounted in your plane. Make a race out of 1/32 plywood for the arm of the timer to run in and you are ready to install the mechanism in the ship.

SOME POINTS ON INSTALLATION—The builder should realize that the farther back in the tail the timer is installed, the more weight must be placed at the nose of the ship, so figure your weight arrangement carefully. The timer can be cemented to bulkheads and braces in the fuselage. When glueing in the timer, be careful not to get cement in the hole that was punched in the case, or on the piston rod or valve. Ordinarily, only 2 bearings are needed on the operating wire, the one at the timer and one installed at tip of the tail. A very light coil spring should be attached to the operating wire to give a slight tension to pull the wire toward the tail. This coiled spring can be bound with thread and cemented to the operating wire back of the timer. *Very light* tempered steel wire wound around a large nail will make a good spring. Make it light as the pull it exerts detracts just that much from the power of the timer to release the elevator.

THE HINGE FOR FRONT OF ELEVATOR—Various ideas were tried before the suggested hinge was developed. It is made of sheet metal from a tomato can, and a match stick is used for the hinge pin. On a rough landing the match stick will generally give way, which is a valuable safety feature. With this style of hinge a limited amount of incidence adjustment is possible. The front of the elevator should be held down with a light rubberband over a wire clip cemented near the front of the rudder. An eighth inch dowel through the fuselage, parallel and below the leading edge of the elevator, anchors the band on each side.

An angle piece from aluminum is drilled properly for the clip and glued at the trailing edge of the elevator. Several holes may be drilled close together in a vertical line instead of the single hole shown for adjustment. If this plan is used, cement all holes but one closed after adjustment of the ship is complete, so you won't make mistakes later.

EXPERIMENT WITH ANGLE OF ELEVATOR—Ordinarily an angle of 35° to 45° is about right to bring the ship down properly. If the angle is correct

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152.4 MPH by Temte and Thor, April 11, U. of Minn. Field House Meet, indoors, necessitating 60 ft. lines.

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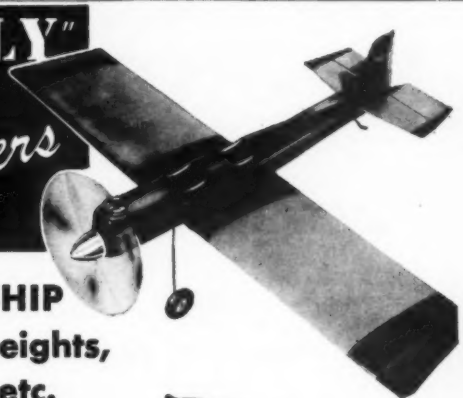

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and the play at the hinge is not excessive, the ship will descend like a parachute and sink straight down with an easier landing than in normal flight. If the ship stalls or spins when dethermalized, the angle of the elevator is not correct, or the elevator hinge allows the tail to wobble. Even then, the ship should land without damage.

THIS DETHERMALIZER WORKS—If properly constructed and installed, this dethermalizer is reliable and successful. The Goldberg principle of throwing the elevator at a negative angle will be found sound. The author has had dozens of flights terminated this way in the last 5 years. In one case the ship came down through two clouds. The most spectacular performance was at the Sedalia, Mo., meet in 1945 when the ship, just a speck overhead, dethermalized and settled to earth at the edge of the take-off field. Only in the case of black storm clouds is the dethermalizer ineffective, and those clouds will carry away your hat and maybe even your tool kit as well.

FOR GLOW PLUG TIMING, TOO—The free flight glow plug fan will immediately see the advantage of the converted timer with its jump release for glow plug and diesel motors. It makes accurate timing of the motor run possible, and the spring installation on the valve knob simplifies the setting of the timer.

The Dean

(*Continued from page* 35)

portion. This should be done with care since, as mentioned, this part is later used for the stabilizer. Cut out the ribs and bend the wing outline to conform to the rib shape. Trim ends of the ribs so they get progressively shorter toward the wingtips. When the the ribs are cemented in place, the wing halves can be fastened together. Sand the outline to conform with the wing section as shown on plans.

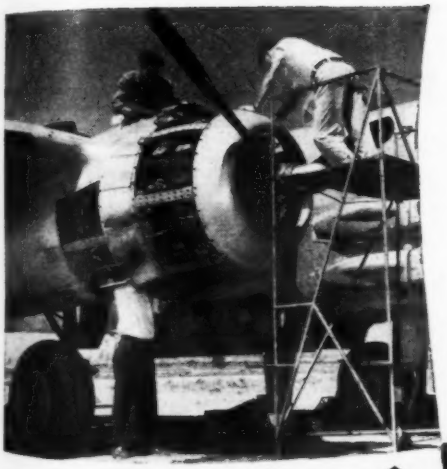
The stabilizer is next; it is made in the same manner as the wing except that there isn't any dihedral and the stabilizer is made in one piece. The ribs are the same as those for the wing only shorter, and are trimmed in the same way. Sand the outline edges as you did on the wing and be sure the leading and trailing edges blend into the rib section.

To cover this type of wing it is well to start on the underside as the job is easier this way. When the wing is covered on both sides, spray lightly with water and let dry. Dope with glider polish, which should be thinned 50-50 for best results.

Now the stabilizer is covered. When finished, cut the fuselage out to accommodate the stabilizer and cement in place well because the stabilizer must not move in flight. Cement rudder in place as straight as possible, as the ship can be made to turn with the wing by warping the leading edge up or down.

The wing is now cemented to the pylon and a final check made to see that the wing is drying straight because this will help the ship to fly properly.

Hold the wing in place with scotch tape and glide test the ship. It should balance as shown on plan. Move the wing back and forth till glide is flat; these tests should be made with prop off. Charge the tank, launch with the nose up, and watch the way the ship turns. The original turned to the right under power and circled to the left in the glide. To date its best time was 4:45 under rather poor conditions. We expect great things from it when really warm weather arrives and the engine can do its best.



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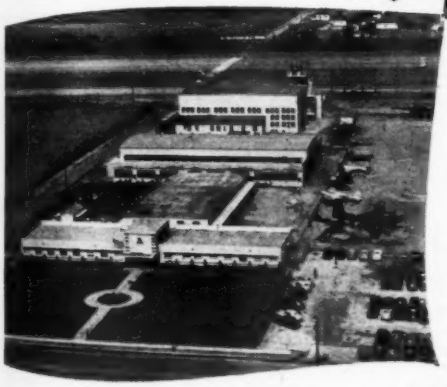

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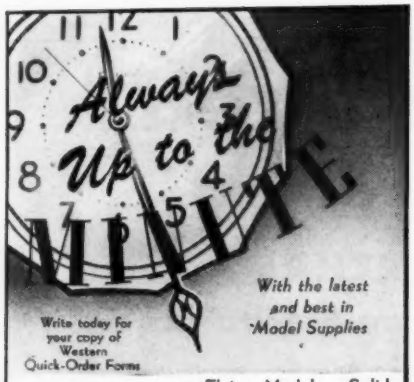

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(*Continued from page 12*)

" 'On Sunday afternoon about 4:30 a local farmer was haymaking with some of the local boys when a small aeroplane floated down out of the cloudless blue . . . being very scary after hearing about German secret weapons they retired to the far side of the field and allowed the model to land . . . one, brainier than the rest, said it must have been one of those infernal machines filled with gas that the Germans are sending over. One brave farmer sent for his gas mask and, so armed, approached the infernal machine and inflicted several wounds upon it with his hayfork. After this operation the farmer retired to let the poisonous gas disperse and came along for me. I arrested the offending object and rang you up the next day.' "

That does it, H. J. Watkins—you get the monthly award of a free year's subscription to MODEL AIRPLANE NEWS. We won't print those other stories of yours for awhile. Let's give some of our own own "laddies" a chance to recover our national honor by trying to top this yarn.

* *

For those who request dope on new records, here are some of the latest: Bill Tharp, Ocean Park, Calif. on Feb. 1 ran up a total of 22:31.2 in Class D Open rubber-cabin. Polyhedral multispar wing of 42 in. projected span and 198 sq. in. projected area. Single blade folder of 17 in. diam. Power was 20 strands of 3/16" flat (not T-56). Length 42 in. and weight 8-1/4 oz. One retracting wheel with two sub rudders on multi-spar stabilizer.

First dope on the Huth and Mathews speed records mentioned last issue: Ed Huth, Alameda, Calif. on Feb. 29 hit 139.05 mph in Class C Open speed. Designed by Huth and Mathews, ship weighs 22-1/2 oz. and used *Arden Glow Plug* in *McCoy 49* engine. Fuel mixture was two parts methanol to one part castor oil and nitro methane. Air-O bought rights to one-blade 9" diameter, 11" pitch prop. Counter-balance enclosed in 2" diameter Froom spinner. Gottingen 595 airfoil set at minus 1/2 degrees. Wing had 48 sq. in. of area. Aero-Gloss finish.

Charles W. Mathews, Alameda, Calif. 150.57 mph in Class D Open. *Arden Glow Plug Hornet*. Low weight of 26-3/4 oz. due to glo-ignition permitted use of .0099" lines. Length 19". Tapered 18" wing with Gottingen 595 airfoil. Conventional appearance but large fin. Single blade prop in 2" Froom spinner has adjustable pitch mechanism within hub.

Carl Rambo, Oakland, Calif. on March 21 did 1:09.2 (best of 9 attempts) in Class B open, indoor hand-launched glider. Fuselage 18-7/8" long, 5/8" in maximum depth. Polyhedral wing with parabolic outline, and reported area of 42 sq. in. Flat-bottom wing section, with sharp bamboo leading-edge reinforcement, and maximum camber of 1/4" at root chord of 3-1/2" at 25% point. Span 15-1/2". Tail surfaces of 1/32" sheet. Weight .728 oz.

Malcolm Anderson, Alameda, Calif. on March 6 did 129.17 in Class B Open speed. Sidewinder type rudderless model of 15" span and 18" length. *Tornado .296* for power, and single blade prop with 8-1/2" diam. and 10" pitch. Anderson also set a mark of 104.25 on the same day in Class A open with *Tornado .19* sidewinder design.

Joe Dodson, Hampton, Va. on Feb. 15 ran up three-flight total of 14:54 in Combined Class Open CO2. Used polyhedral wing with 147 sq. in. area and 35" span. Root chord 4-3/8". Stab area 67-1/2" sq. in. with twin rudders. Built-up fuse, 21-1/2" long, resembling Planecraft *Caroneer* in appearance. Low thrust line. Prop 8" diam. from balsa.

These aren't half the records set and accredited recently, but space does not permit a complete listing. The above were selected for their importance and general interest. We did note several records in towline with Jasco products and one with a Berkely *Sinbad*.

* *

NOTE: Since the many matters brought to our attention by correspondents cannot always be reported immediately, we want to say that such information and support is truly appreciated, and as fast as time and space permit, such material will be included in future columns—B.W.

Flash

(*Continued from page* 1)

the 10,000 miles between continental U.S. and Moscow is the hoped-for existence of friendly bases in Africa, the Middle East and India. A quick glance at the map will show that with this 6000-mile range, a B-29 (or other bomber) can fly from the U.S. over any major Russian production center and land at one of these points. Thus: a major revolution in strategic bombardment!

MOVING AN AIRCRAFT factory is now a reality, after heated wartime debate over the impossibility of such a move. Chance Vought Division of United Aircraft Corp. is now in the process of moving from its Stratford, Conn., home to Dallas, Tex., where it will occupy Plant "B" of the huge wartime North American Aviation facilities. The new factory contains 2,900,000 sq. ft. of manufacturing and office space (about twice Vought's present facilities) together with an ample runway system, gun firing range, etc. Purpose of the move: "larger and more efficient manufacturing quarters," but observers predict the move is based largely on an F6U *Pirate* Navy jet fighter production program, not yet announced. Operations will continue at the Stratford plant on the remainder of the F4U-5 *Corsair* schedule and a service test quantity of 30 *Pirate* fighters but the move is planned to be complete and production underway this time next year.

THUNDERJET FIGHTERS are now "ready for combat" and the sleek jet speedster has been declared fully operational by Air Defense Command. Headquarters of the new craft is the 14th Fighter Group at Dow Field, Bangor, Me., where 78 Republic P-84 Thunderjets are now "in readiness." This northeastern bastion is strategically placed to protect our eastern shores against attack. Also slated to receive Thunderjets is the 20th Fighter Group, Shaw Field, S.C., of the Tactical Air Command and the 33rd Fighter Group at Roswell Air Force Base, N.M., of the Strategic Air Command. It is interesting to note that both of these latter groups are adjacent to atomic bomb production and development centers. The *Thunderjet* has rated top speed of 590 mph, ceiling 40,000 ft., range 1000 mi. It is armed with six .50 cal. machine guns (with a rate-of-fire 50% above the standard W.W.II aircraft machine gun) and can carry rockets and aircraft bombs. Three other fighter groups, not yet selected, will receive *Thunderjets* from a total production of 600 of the type.

NEW TURBINE propeller engine is revealed with the Flader T-33 being unveiled with a 7500 hp rating. The huge engine has multi-stage compression, multi-stage turbine and an adjustable nozzle to provide thrust variations as required by the pilot. New name in the aircraft field is actually that of Frederic Flader, long time engineer with Curtiss-Wright companies and designer of numerous aircraft and industrial gas turbine projects.

WHAT STARTED OUT as "tinkering with scrap" has evolved into an astonishingly simple and effective turbojet engine, developed by West Engineering Co., Van Nuys, Calif. Two years ago Edward West Jr. purchased 6000 surplus turbo-superchargers which had never been used. While casting about for some means of selling them, West hit on the idea of utilizing the units as a turbine in a small jet unit fitted with a single combustion chamber. The Navy became interested and asked West to supply three experimental units for test. The resulting engine weighs only 175 lbs. and develops 400 lbs. of static thrust, not much as a fighter goes but ample for several Navy guided missiles now under test at Point Mugu, Calif. The units sell for $2800 each, but West believes that in production this price can be lowered to about $1200. With obvious lightplane application, C. L. Wolford, racing pilot, is already beating the lightplane manufacturers to the punch with construction of a twin-jet light racing plane for the National Air Races. On the more saleable side, West has designed a small, four-place personal aircraft powered by two of his units which he claims

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Biplane (large illustration) for easy assembly, plus stable flight features, plus unusual stunting ability, get the new 24" Pacific Bi-Line. Complete kit

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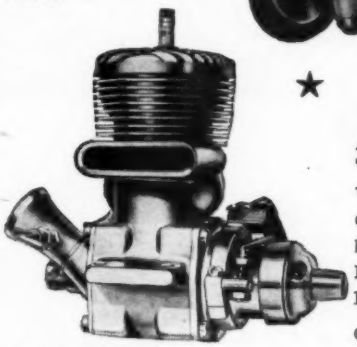

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Car furnished complete with fuel tank, coil mount, battery case, switch and bridle —less engine.

Records with the "61"

Airplane—AMA Official: Wm. Viets, Springfield, Mass., 143.82 MPH.

Proto Race Car—AMRCA Official: Ray Stevens, Los Angeles, 123.78.

Spur Gear Car—IMRCA Official: Hap Williams, San Francisco, Calif., 127.11 MPH.

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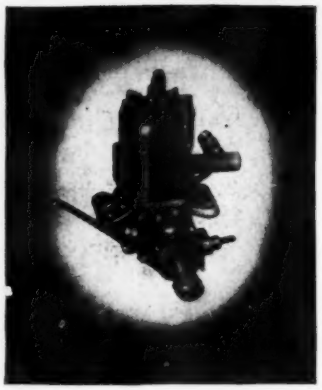

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A positive fuel cut-off valve. Write for more information.

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will cruise at 250 mph and have 360 mph top speed. Weighing only 5000 lbs., the West jet private plane could be sold for $7000 in production quantities.

EASTERN AIR LINES, alone apparently among the deficit-ridden scheduled airlines, is purchasing two new Lockheed 749 "Gold Plate" Constellation transports and 20 Convair Liners to round out its fleet upon retirement of the Douglas DC-3 and DC-4 over the next two-four years. Convair incidentally has been obliged to "up" the price of the trim 40 passenger, 300 mph liner from $360,000 to $450-500,000 each (depending on special equipment) in the face of rising labor and material costs and the drastic cut in total production orders originally planned. (Remember when we thought $105,000 was an awful lot of money for a brand new Douglas DC-3?)

WRIGHT AERONAUTICAL CORP. received a $17,518,135 contract for production of R-3350-26W engines for the Navy. This latest version of the famed wartime engine develops 2700 hp dry and upwards of 3500 hp with the use of water injection. These engines are for installation in Douglas AD-2 *Skyraider* and Lockheed P2V-2 *Neptune* long-range patrol plane, holder of world's distance record. Wright also revealed successful flight tests of its new compound engine, a standard R-3350 engine with three small turbines mounted on the rear and geared directly back into the engine to utilize the considerable energy formerly wasted in the exhaust. The compounding system reduces fuel consumption about 20% over the standard engine, permitting an increase of 1000 miles in range of a standard bomber, at no increase in fuel load!

THE HELICOPTER FACES AN expanding future in both Air Force and Naval Aviation, according to speakers at Fourth Annual Forum of American Helicopter Society. The Air Force is now planning "escort" helicopters which would accompany bombers over the greater portion of their mission to provide instant rescue of aircrews forced down. This new helicopter would feature multi-engines and a capacity of 10-15 passengers: a complete bomber crew. Navy now considers the helicopter standard equipment for all carriers (for use as plane guard rescue craft replacing destroyers) and will replace all scout and observation planes aboard cruisers and battleships with rotary wing craft. But the Coast Guard comes up with the most exciting idea yet: a "parasite" helicopter to be stowed in bombers or carried in external packs capable of air launch for search-rescue duties. Best "believe it or not" helicopter story, sworn to be factual, was that of a Bell test pilot who was forced to go "on instruments" while flying through locust swarms in Argentina during locust dusting operations last Summer. The locust control expedition, incidentally proved 98% effective in killing off the locust plague.

NEWS ROUNDUP—Second Grumman XF9F-2 *Panther* is now flying and No. 3 is ready for installation of its Allison "400" turbojet engine. First two *Panthers* use imported Rolls-Royce *Nene* engines. The speedy craft is reported to have hit Mach number 0.88 on test flights . . . Northrop XB-35 *Flying Wing* bombers are flying again with new single-rotation Hamilton-Standard propellers, which eliminate the troublesome counter-revolving gear boxes of the prototype . . . North American XP-86 will get the new General Electric TG-190 engine of some 6000 lbs. thrust—putting its speed up near the sonic mark . . . Lockheed *Shooting Star* is now a trainer with the TO-1 being produced for the Navy, and the TF-80 two seat version in production for the Air Force—no impairment in performance, says Lockheed . . . Convair B-36A stayed aloft 30 hrs. in "routine flight" while covering about 6000 miles and Air Force insists this is far from maximum yet to be attempted . . . Watch for Air Force release of McDonnell XP-85 Parasite Fighter—strangest airplane since World War I days.

THE NEW LOOK!

* * * * * * * * * * * designed by: WALT SCHRODER

CAN BE USED IN ALL FOUR CLASSES! With the smaller engines (classes A & B), the NEW LOOK can be flown for sport or used for your first flights--stable, easy to fly, it makes an ideal "first model". For day after day, consistant sport flying it can't be beaten. Glo or ignition engines can be used, or for the simplest flying, use a Diesel! For speed flying, using class C & D engines, the NEW LOOK can be flown 3 different ways. Remove one cowl, fly it as a "sidewinder". Remove both cowls, install the engine upright and fly as a conventional speed ship. One cowl can also be mounted vertically for pressure cooling the highest rpm racing engines!

OPEN THE BOX AND BUILD IT!
The NEW LOOK Kit is *complete*--from the shiny machined-spun spinner to the tail of the precarved fuselage (inside *and* out). The wings are airfoiled, the cowlings carved, all metal parts are finished, ready to use, the spring metal landing gear (same as used on Goodyear Trophy winner) is ready to install. The kit also contains famous Photo-Viz plans, rubber wheels, every other material to build this ship.

Span - 22" Area - 80 sq. in. Length - 18½"

A *NEW LOOK* IN CONTROLINING!
The latest, most complete controline gas model kit to relieve the monotony of the "same old thing" in gas modeling. The *NEW LOOK* sports a "VEE" Tail and modern "Apple Cheek" Cowl.

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2" dia.	1.00	2 3/4" dia.	1.25
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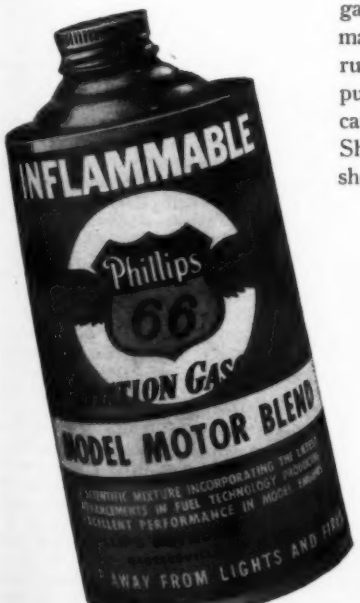

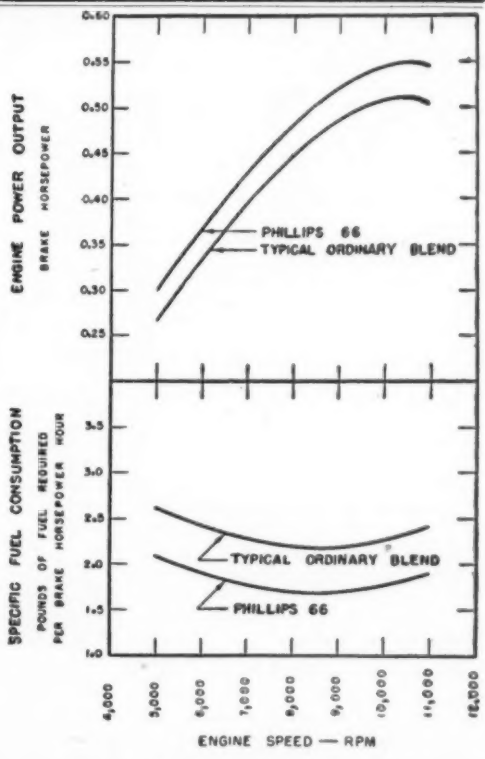

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SPECIFICATIONS:

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Collapsible Trainer

(Continued from page 27)

EMPENNAGE—The tail unit is installed by gluing the stabilizer in the horizontal slot of the fuselage and the rudder in its vertical groove. The slot and groove insure perfect alignment. Bind the rear end of the fuselage with thread passing through rudder and stabilizer to aid the glue in holding the 3 sections of the fuselage at this point from spreading which would occur if the glue loosens.

Carve the rudder with an airfoil shape flat on the right side and cambered on the left and it will tend to swing the ship out from the center of the circle when flying, without having to provide a portion offset to the right. The elevator is best hinged to the stabilizer by means of a friction free hinge of the "sewed thread" type (described in Jan. 1946 issue, page 44). By making the elevator of mahogany, it is unnecessary to glue a hardwood strip to its forward edge as is the case when a balsa elevator is used.

LANDING GEAR AND TAIL SKID (Drawings 8 to 14)—The folding landing gear consists of a landing gear wire and a brace wire. The central portions of both wires are hinged to the wing by means of 4 tin clips shown in drawing 11 and of suitable size for 1/8" wire. The clips are mounted on the wing by small round-head wood screws. A pair of loop fittings (drawing 10) are formed of sheet brass 1/32" x 3/8" x 5/8". They are bent U-shape, and a 1/8" wide x 1/8" deep notch is filed in the arms of each at 60° angle, one being formed right hand and the other left hand. Round the corners as shown dotted in the perspective view of drawing 10.

The loops and tie wire are bound with fine copper wire and soldered to the landing gear wire. Use a *small* bunsen burner as it is almost impossible to do a proper soldering job of this kind with a soldering iron. Heat the parts to soldering temperature only, however, or the temper will be drawn from the landing gear wire. The loops receive terminal ends of the brace wire when the landing gear is unfolded for use. The brace wire must be sprung to permit reception of its ends in the loops and this insures their staying together during takeoffs and landings. In order for the landing gear wire to swing to the folded position shown in side view, you will have to slightly notch the rear edge of the wing back of each clip that hinges the wire to the wing.

The tail skid (see drawing 12) is hinged by means of two of the tin clips of drawing 11 of suitable size for 1/16" wire and are mounted on bottom of the fuselage by small screws. A spring clip (see drawing 13) receives an elbow on the forward end of the tail skid as in drawing 14 to keep it extended. To fold it against the stabilizer, push forward and swing to the right. The tail skid is preferably provided with a tail wheel to reduce drag during takeoffs.

ELEVATOR CONTROL (Drawings 4 to 7)—Patterns are given for the control lever and the elevator horn. The control lever is cut from 1/16" *Dural* and pivoted at 40% of the wing chord by means of a No. 5 x 1/2" R.H. wood screw and a washer (drawing 5). The control lines extend from its ends through two small screw eyes located on bottom of the left wing about 4" or 5" from its outer end. The elevator horn is cut from sheet tin as shown in drawing 6, drilled and bent to the final shape of drawing 7. Sharp prongs at each end of the attaching flange bite into the elevator to prevent the horn

from turning on the single No. 8-32 x 3/16" bolt used to anchor the horn to the elevator.

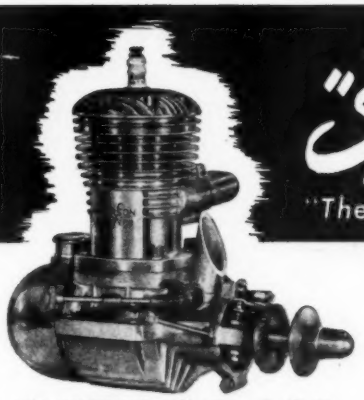
A 1/16" control rod with Z-ends connects the horn to the control lever. Its length should be such that the elevator can swing between a 5° down-angle and a 30° up-angle for stunt flying. Two stop screws are mounted in the wing to determine these limits. For initial training, however, locate them for a 3° down-angle and a 10° up-angle, and after skill has been attained in piloting your *Trainer* set them for 5° down-angle and 20° up-angle for more sensitive control in diving and zooming. The 30° up-angle adjustment is for looping. Locate the stop screws after assembly of the stabilizer, elevator, wing and control rod, measuring the angle of the elevator to determine the positions for the screws.

FINISH—As a finish, 4 or 5 coats of clear floor varnish are recommended, wet sanding between coats except for dry sanding after the first coat. Needless to say, the surface of the wood should be well sanded before the first coat, the final sanding being with the finest sandpaper obtainable. Five coats of varnish then produce a very smooth and hard finish, but be sure to let each coat dry thoroughly (at least 48 hours). A final coat or two of *Duco* of the desired color, preferably sprayed on, results in an excellent and beautiful job, especially when rubbed smooth and waxed. Be sure *not* to use dope or lacquer as a final coat as either one will soften varnish. If you want a lacquer finish, the under coats should be of clear lacquer.

It will be much easier to finish each part of the plane before assembly. Don't varnish in the groove and slot of the fuselage, however. The hinge extensions should be varnished all over at least 2 or 3 coats to prevent the possibility of becoming oil soaked. After the final coat of varnish, wrap about two layers of gummed paper tape 1-1/2" wide *tightly* around the horns of the fuselage to prevent the wood from splitting when the engine hold-down screws are inserted. After the final coat of finish, the rudder and stabilizer are glued in position and the rest of the parts may be quickly assembled and any necessary finish touches added.

FLYING—In flying the *Collapsible Trainer* the author found controlling it quite comparable to a *Fireball* having a sugar pine lower fuselage half, powered with an *Ohlsson & Rice 60* and weighing 2-1/2 lbs. Maximum speed was about 15% less than the more streamlined *Fireball*. The *Trainer* could be flown in winds that discouraged trying to fly the *Fireball*. The *Drone* engine has plenty of power to drive props having high enough pitch to get 45 to 60 mph and yet take the plane off after a reasonably short ground run. In taking off, hold the plane to the ground by having the elevator down for 10 to 25 ft. and then raise the elevator gradually for takeoff. In landing, after the engine stops, keep the plane about level, letting it sink slowly until it is close to the ground and has lost nearly all its flying speed. Then give the elevator down-angle to bring the plane into contact with the ground and check its speed so that it soon stops rolling.

Start test hopping with a low pitch prop and change to successively higher pitch props as you learn its handling characteristics. In this way your skill in flying the *Trainer* can be progressively acquired and the danger of a crackup is minimized. Elevator action also should be



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The guaranteed engine... with crankshaft rotary admission valve and dependable proven Electric Spark ignition, which makes starting easy and insures positive running. Present users acclaim the Mel Anderson "Spitfire" the finest model airplane engine.

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- PISTON DISPLACEMENT .604 CU. IN. OR 10 CC.
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IT'S SIMPLE - IT'S FUN!

The Red Wing ENGINE CONTROL mounts on the intake tube of the engine, with a cord link to the bellcrank. The attachment screw and the cord line are provided.

TO FLY UNASSISTED:
Leave the plane on the ground in take-off position with the engine idling. Walk out, pick up the control handle give it full up in a flip motion, returning immediately to neutral and the plane is revving up, taking off.

TO LAND AND TAKE-OFF:
Simply move the control out with a sudden motion, about six inches, then pull it back. The control will flip to idling land the ship, then give it full up on the control to take off again.

FULL POWER *IDLING*

The Red Wing ENGINE CONTROL is adjustable to your "feel" of flying--there's nothing to learn.

SEE IT AT YOUR DEALER'S

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increased gradually by adjusting the control lever stops.

It is best to install some type of engine control for slowing down or stopping the engine at the will of the pilot. A normally closed by-pass valve connected with the crankcase or intake tube between the needle valve and the crankshaft bearing is satisfactory. Such a valve can be controlled by a thread extending to the pilot in the same manner as Jim Walker's original engine speed control connected with the timer arm.

The *Collapsible Trainer* will be found convenient to transport and quick to set up for flying. The one made by the author with 30 lb. mahogany wing, fuselage and elevator weighed 22 oz., 1 oz. of which was the finish. Adding the engine and prop (10 oz.) results in a plane weighing exactly 2 lbs.

The plan and side views show the inside limits of a carrying case by means of double-dot-and-dash lines. One can be readily made from a corrugated cardboard carton and equipped with compartments to hold fuel bottles, tools, control handle, reel, etc.

If you aren't interested in the collapsible feature but still want a rugged trainer that can be quickly made, the plans are entirely suitable with but slight modification for a one-piece wing and fixed landing gear and tail skid. Just cut the wing, fuselage and tail elements to outline shape, cut the slots for tapering the wing (starting at the center if you wish) and start carving. The one-piece wing can be made somewhat lighter, about 3/8" or 5/16" thick at the center. A 5/16" wing will reduce the weight about 4 or 5 oz.

Air Ways

(*Continued from page* 31)

pal, preferably one interested in power jobs and control line speed models. He is interested in all types of power units including jets and rockets. Brian is 19 and would like to exchange an English model magazine each month for copies of M.A.N.

From "down under" in New Zealand, Alban J. Symes (Uruwhenua, R.D. Takaka, Nelson) requests a correspondent in the U.S.A. who is experienced in free flight gas modelling.

Plea for correspondence with an aeromodeler about 14 years old comes from A. Ham (3 Warren Road, Leyton, E.10, London, England). He appears to be interested mainly in control line models at present, particularly stunt flying.

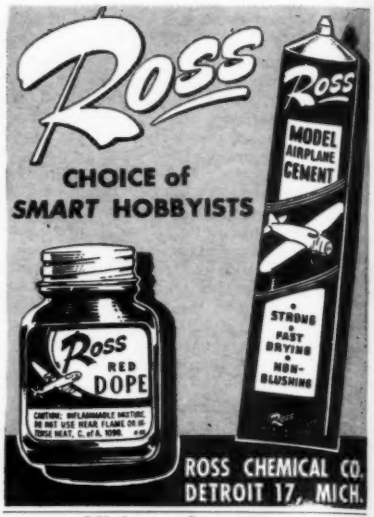
G. Lewis (13 St. James St., Monmouth, Mon. England) is 19 and wishes to get in touch with someone of his own age interested in free flight and control line gassies. He is a booster for diesel engines.

Again from England, Harry W. Gilkes (50 Alder Rd., Longford, Coventry, England) asks for a pen friend about his own age (17) who is enthusiastic about all types of power model flying. He has several diesel engines now in use and has reached a speed of 55 mph with a modified trainer pulled along by a Mills 1.3cc engine. He would also like to exchange magazines.

CLUB NEWS

California

Los Angeles Aeromodelers have an active contest season planned for 1948 (see "Coming Contests"). Most events are for members of L.A.A.M. only, but Open U-Control and Open Free Flight Gas



Miniature Stunt Plane

Interested in controlline stunt flying? As a change from the usual big kites flown in this category, try a copy of *Ginger Snap*, a tiny class A diesel-powered stunt model, which will do all the tricks in the book, on a miniature scale. Plans and instructions in August MODEL AIRPLANE NEWS!

Years Ahead In Design!..

SPEEDWAGON 30

Design-Engineered for Class "B" Engines. Features "Circle Flight" with "Weather Vane Stability".
Test Flights Indicate Speeds over 130 MPH. Best Record to Date—138.5 MPH. Mc'oy 29 Glow Plug. Kit includes Grade A-1 materials completely preshaped. Full size detailed drawings. Complete instructions for ease of assembly and tips for successful flying.
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The "SPEEDWAGON" for "C and D"— **only $4.95**

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meets will be held in Oct. and Nov.

Thermal Thumbers cleaned up in two L.A.A.M. inter-wing contests. Results of the indoor meet held Feb. 8 were:

H.L. Glider—Bob Dagana 1:07.1.
Paper-covered—Bill Atwood 10:37.5.
Stick—Bill Atwood 22:15.0.

For the Outdoor Meet on March 7:

H.L. Glider—Don James 8:43.3.
T.L. Glider—Bob Hanford 12:13.9 (Flight Masters).
Stick & Cabin—George Honda 20:39.2.

First of a series of contests to develop greater youth interest in model aviation was held by the *Thermal Thumbers* in April; the next will be Oct. 17 which will include outdoor rubber stick and cabin events only. These contests are limited to Jr. and Sr. classes.

Oakland Cloud Dusters will hold one indoor and one outdoor AMA record trial per month. At trials held April 11 at Livermore, two AMA records were set: Myrtle and Pop Robbers hit 14:11.8 in Class C H. L. Stick; and Lawrence Parsons made 10:25.8 in Class D T.L. Glider. These record trials are open and flyers of neighboring clubs are welcome. The *Dusters* hold many other 1948 records in glider, stick and helicopter classes.

Fresno U-Liners meet of April 11, held under windy conditions, produced these winners:

Sr. Class D Speed—1. Wayne Mathews 149.0; 2. Doug Fritz 84.0.
Sr. Class B Speed—1. Russ Cronin 89.96; 2. Billy Price 55.0.
Sr. Class C Speed—1. M. Huth 138.44; 2. Francis Marshall 126.71.
Sr. Class A Speed—1. Alvin Costa 62.5.
Jr. Class B Speed—1. Gene Webster 98.86; 2. Wayne Gowan 72.55; 3. Willard Edmunds 69.20.
Sr. Precision—1. Tom Van Dyke 342; 2. R. Allred 192; 3. B. Fritz 180.
Jr. Precision—1. Alex Petri 194; 2. Donald Frietas 109.

Wayne Mathews completely demolished his 150 mph record breaker, but won the Class D trophy with his first run.

At the *Bakersfield* Free Flight meet on April 4, Allen Trainer made a perfect score with three 10 min. flights, a fine piece of consistent flying, and carried off top honors in Class A-B Expert. Other winners were: 2. Paul Jones 21:43; 3. Neal Killian 21:34.

Expert Class C-D: 1. Earl Ford 24:0; 2. Dick Everett 21:37; 3. Ken Neubeiser 21:11.
Novice Class A-B: 1. Robert Spencer 27:25; 2. Ralph Kruger 25:26; 3. Donald Martin 22:33.
Novice C-D: 1. Daryl Shepard 24:22; 2. Roy Buchanan 24:00; 3. Richard Erikson 22:40.

The old "F.G.M.A.C. News" will henceforth be known as the "Fresno Model News," so that those who see it will know where it originates. This paper has been published for 8 years without a miss—congrats!

From the San Francisco Recreation Dept. we learn that the *San Francisco Vultures* indoor contest held in March produced the following winners:

Indoor H.L. Glider

Jr.—1. Einar Enevoldsen 0:48.3; 2. Robert King 0:28.0; 3. Darrell Larks 0:37.6.
Sr.—1. Angelo Lo Castro 0:57.8; 2. Edward May 0:50.1; 3. Charles Dorsett 0:50.0.
Open—1. Carl Rambo 1:02.4; 2. Michael Demos 0:59.2; 3. Tie between John Tatone and Joe Bilgri 0:57.3.

Flying Scale

Jr.—1. Einar Enevoldsen 2:10.7; 2. Darrell Larks 1:22.2.
Sr.—1. Edward May 4:05.3; 2. Douglas Smith 2:53.0; 3. Robert Risvold 2:48.8.
Open—1. John Tatone 4:27.5; 2. Carl Rambo 4:01.5; 3. Ralph Igler 3:18.2.

Indoor Stick

Sr.—1. Don Kennedy 21:12.1; 2. Charles Dorsett 9:47.9; 3. Edward May 8:09.7.
Open—1. Bill Atwood 22:31.9; 2. Frank Cummings 22:19.9; 3. Carl Rambo 21:32.6.

At the March 10 meeting of *Southern California Model Congress* it was decided to raise the pull test for Sport Flying to 15 G's. A motion was passed instructing the *C.A.M.C.* to petition A.M.A. to abolish

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Hornet Boat Engine, Model 60-B (includes flywheel)

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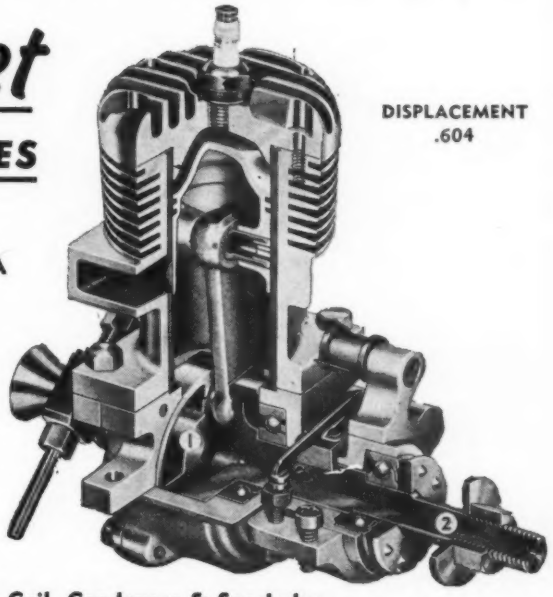

DISPLACEMENT .604

Complete, except for Coil, Condenser & Sparkplug

"Wayne Mathews' (pictured above right) single-bladed *Hornet* powered speedster wound itself up to the unbelievable speed of over 150 mph. The official speed is not out yet since it will be calibrated back at AMA headquarters, but it will be in the neighborhood of 151 plus."

(From "Model Airplane News" report of Record Trials at Western & Rosencrans Dust Bowl, Los Angeles.)

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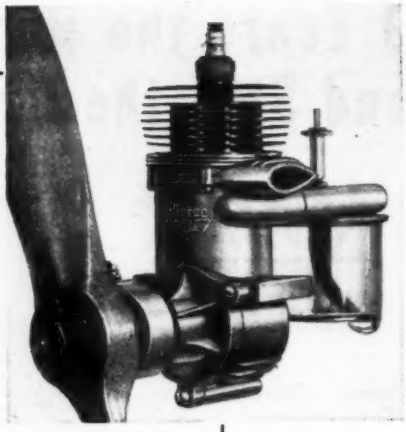

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ADD $1.50 FOR COIL AND CONDENSER

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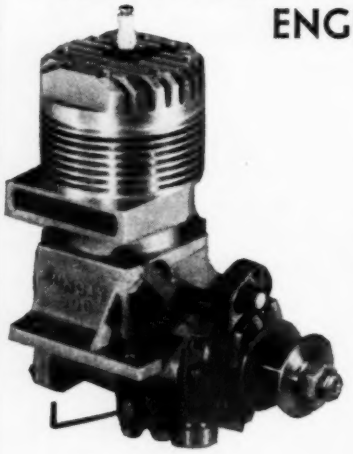

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Bungay "600" Engines are designed and built for long life at high R.P.M. Bore .940"; Stroke .875"; Displacement .607 cu. in. Compression ratio 9.8-1. Ball bearing equipped. Hardened steel cylinder sleeve Aluminum piston with two rings. Timers are calibrated at maximum H.P.

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Class A record trials.

Modesto Flying Circus meet on Feb. 22 produced several new speed records, including the now well known 150 mph of Wayne Mathews. Mel Anderson reached 97.82 in Class A, breaking the previous record by 6 miles. Members of the *Flying Circus* did not participate but served as judges and field officials. There were over 200 contestants and results were:

Expert Speed Class A-B: 1. E. Huth 122.44; 2. W. Richards 115.38; 3. Mel Anderson 114.64.
Expert Speed Class C—1. W. Richards 129.5; 2. H. Shiman 128.57; 3. J. Guggemes 119.0.
Expert Speed Class D—1. C. W. Mathews 150; 2. R. Cronin 131.38; 3. A. Flanders 120.
Advanced Speed A-B—1. W. Vance 99.55; 2. L. Lutz 99.44; 3. H. Ross 96.25.
Advanced Speed Class C—1. H. Allbright 124.13; 2. C. Hallum 113.92; 3. P. Gosch 106.5.
Advanced Speed Class D—1. W. Powell 120.8; 2. C. Tyler 115.38; 3. R. Preston 113.2.
Expert Precision Class D—1. Ray Regalia 385; 2. Sumner 350; 3. F. Bradford 328.
Expert Precision Class C—1. B. Thunberg 302; 2. H. Hollfedder 223; 3. E. King 219.
Expert Precision Class A-B—1. R. Regalia 347; 2. C. Bussard 326; 3—Sumner 220.
Advanced Precision Class D—1. W. King 317; 2. T. Van Dyke 284; 3. L. Stanton 174.
Advanced Precision Class C—1. Van Dyke 262; 2. King 203; 3. J. Pedracci 181.
Advanced Precision Class A-B—1. P. Bray 254; 2. Pedracci 237; 3. J. Ratzlaff 218.
Novice Precision—1. S. Lawrence 248; 2. V. Garner 176; 3. J. Coster 138.
Team Precision—1. Tie between Bradford-Butman, and Thunberg-Pedracci, 115 each.
Scale Model Class—1. John Waterman; 2. Jerry Quarton.

Allen Sims, Pres. of the *Flying Circus*, tells us they are members of *Aero Modelers Association of No. Calif.*, and of *C.A.M.C.* He also wishes publicly to thank the local *Exchange Club* for the fine support given to model activities.

Marin Aeromaniacs will hold their 2d Annual Speed and Precision U-Control Meet on June 13 in conjunction with the Marin County Junior C. of C. Ray Velatti will serve as Contest Director.

A glider contest held April 4 by *Westwood Model Maulers* turned out as follows:

H.L. Glider—1. Larry McGann; 2. Frayne Higgesson; 3. Stephen Geraghty.
T.L. Glider—1. Harold Hillman; 2. David Austin; 3. Stephen Geraghty.

This club was recently organized and the Secretary, S. Geraghty, states they would like to have more members.

Orland Knuckle Knickers, according to Ray Cox Jr., expect to have 3 meets this summer. Backing was obtained from the local Kiwanis, and though the members are mostly beginners a board of directors with considerable experience in model flying will assist members who have modelling problems.

San Diego Aeroneers played host to 250 modelers at their annual contest May 16.

We learn from the Dyer's "Aeroneer" that the next meeting of the *California Association of Model Clubs* will be held during the All-Western Open (June 25-28). At the last meeting on March 28, C. O. Wright, Pres. of A.M.A., was a visitor. Official timer cards are being distributed; ask your *C.A.M.C.* representative for application blank for this card.

Connecticut

The 2d Annual Connecticut State Control Line Championships will be held June 13 at Beardsley Park, Bridgeport. This event will be sponsored by *Bridgeport Aeronuts* and the "Bridgeport Herald." It is an AAA event with AMA sanction. The *Aeronuts* annual election showed these results: Pres. Earl Gay; Vice Pres. Carl Hermes; Sec. Don Grassi; Treas. Bob Hellman; Pub. Chairman Bob Porter; Sgt.-at-Arms Bill Wargo; Records Sec. Gabor Nagy.

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LOUISVILLE KENTUCKY

have a membership of 40 with activity in model planes, boats and cars. Most plane work is in the U-control line, due to lack of flying space. Bob Allyn writes that they hold contests each month to determine high point standing among members.

District of Columbia

Congress Heights Flying Club, a new organization in the District, held a U-control meet Apr. 25. While they have no place available that will conform to AMA rules, they hope this situation will soon be remedied.

Florida

From the "Skyscraper News" we learn that the *Florida Ass'n of Model Clubs* has gotten under way. Florida clubs are invited to join; write to Don Warner, P.O. Box 1581, Lakeland.

Here are results of an election at *Exchange Aero Club*, in Lakeland: Pres. Bill Housefield; Vice Pres. Earl Duncan; Treas. J. T. Smith; Sec. Tommy Duncan; Sgt-at-Arms Billy Brooks. This club would like to exchange club papers with all other clubs in Florida and offer copies of their "Propbuster News" for this purpose.

Illinois

Aurora Aeronut Model Plane Club held their Spring meeting March 31 and decided to initiate a more active program of club member contests and help for Junior members. All modelers in the Fox River Valley are urged to join this active club. Write Hart G. Betts, 7 Fox Prom., Aurora.

An all-class meet will be held June 27 at Rockford, to be run by *Rockford Gas Bugs* and *Airvets Post* 38. This A.M.A. sanctioned meet will include 22 events. Write to Arthur Hudson, 609 Kilburn Ave. for more info.

Illinois-Iowa Aeronautical Ass'n has been formed and is now functioning well. Officers are: Pres. Ray Johansen, Galesburg; Vice Pres. Harold Daebelleihn, Rock Island; Sec. Ken Freese, Galesburg; Treas. Leo Miner, Cedar Rapids. The organization hopes to stimulate model activity within a 100 mile radius of Rock Island, Ill. A Closed Free Flight meet for member clubs is scheduled for Aug. 29 at Cedar Rapids. Other contests will be announced later.

Nap-Air-Villains of Naperville will stage a free flight meet for gas, rubber, CO2 and glider in their home city on

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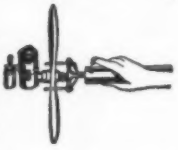

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OK CO_2 Engine $4.95
Lancer CO_2, $1.50; Megow CO_2 Spec.. 1.50
CO_2 Powerhouse, $1.50; Playboy, Baby 1.00
7" Props, Flotorque, 25c; Hithrust .... .35
CO_2 Capsules 10c each, 12 for 1.00

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Ohlsson 23	9.95	Arden 199	18.50
Ohlsson 60	11.95	Forster 29 or 305	14.85
Ohlsson 23 RV	10.95	McCoy 29	18.50
Ohlsson Glowkit	8.95	McCoy 49	25.00
Bantam 19	16.50	McCoy 60	27.50

CONTROL LINE KITS

Snorky	2.25	Trainee	3.95
Super Zlich	4.95	Demco Speedwagon	4.95
Zing	4.95	Demco Super Bipe.	4.95
Nifty	4.95	Monocoupe	4.95
Orbit	6.95	Meteor	7.50

FREE FLIGHT KITS

Playboy Jr.	3.25	Westerner B	4.50
Playboy Sr.	6.00	Powerhouse B	4.95
Zipper	5.95	Westerner C	5.95
Sailplane	8.95	Stinson Reliant	17.50

RUBBERPOWER AND GLIDER KITS

Thermalier	1.00	Comet Gull	1.25
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Eaglet	.50	Condor	1.00
Floater	2.00	Thermic 100	7.50

PURE 1/8" flat, 1c per ft., skein..... 50c
GUM RUBBER 3/16" flat, 1½c ft., skein..... 50c

ACCESSORIES

Aero Coil, Lt. Wt... Quality	2.50 3.00	030, 3c; 035 & 040, 4c; 1/16, 5c; 3/32, 10c & ⅛, 15c.	
Aero Metal Cond....	0.35	Austin 4-way wrench	50c
Toggle Switch	0.50	Arden GlowPlug ...	85c
Slide Switch	0.30	Control Wire, 100'...	65c
Pee Wee Clips, ea.	10c	010, 012, 014 and 016, 140'	75c
Spark plugs, state size	50c	Veco Air Wheels, per pair 2½" 2.15, 3½" 2.50 4½"	2.75
Austin Timer	1.50	Sponge Wheels, Alum. Hubs, ⅞" per pr. 20c; 1⅛" pr. 30c; 1⅞" pr. 50c; 2⅜" pr. 60c.	
Battery Box, Lg., Med. or Sm.....	0.40	Flotorque Props, 8"-14"	35c
Mounting Bolts	4/10c	Hiball Props, 8"-14"	35c
Flexible Needle Valve	1.25	Tornado Speed Props, 8, 9, 10 Dia., 10, 12, 14 pitch	50c
Neoprene Tubing, ft.	25c	Plywood Sheets, 1/16, 3/32, ⅛, 3/16, ¼, 6"x 12"	35c
Airflo Wedge Tank..	1.00	Ball Bearing, Sm. or Lg.	10c
Walker U Reely.....	7.50	Alum. Tubing, ⅛" O. D., 1/16 O. D., 3/32 O. D., Ft.	15c
Walker Remoto	12.50	Testors Carved Balsa Props, 12", 14" & 16" dia.	75c
Flightline Reel	1.25	Elc'mite Coil, 2/3 oz.	1.95
Music Wire, 3 Ft... 020 &			

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BALSA WOOD Best Quality—36" lengths

STRIPS

1/16 sq.	½c	1/16x1/8	1c	1/16x3/16 ...	1½c
1/16x1/4	2c	1/16x3/8	2½c	1/16x1/2	3c
3/32 sq. 3 for	4c	3/32x1/4	2½c	3/32x3/8	3c
3/32x1/2	3½c	1/8 sq. 3 for	5c	1/8x1/4	2½c
1/8x3/8	3½c	1/8x1/2	4c	5/32 sq.	1½c
3/16 sq.	2c	3/16x1/4	3c	3/16x3/8	4c
3/16x1/2	5c	3/16x5/8	6c	1/4 sq.	3½c
1/4x3/8	4c	1/4x1/2	6c	1/4x5/8	7c
1/4x3/4	8c	5/16 sq.	5c	3/8 sq.	6c
3/8x1/2	8c	1/2 sq.	9c	3/4 sq.	15c

PLANKS

1x3	$ .50	1x6	.90
2x2	.60	2x4	1.20
2x6	1.80	3x3	1.50
3x6	2.70	4x4	2.50
4x6	3.70		

SHEETS

1/64x2	8c	1/32x2	8c	1/20x2	8c
1/16x2	8c	3/32x2	10c	1/8x2	10c
5/32x2	12c	3/16x2	14c	1/4x2	16c
5/16x2	18c	3/8x2	20c	1/2x2	22c
1/32x3	10c	1/16x3	12c	3/32x3	15c
1/8x3	19c	3/16x3	22c	1/4x3	25c
3/8x3	30c	1/2x3	35c		

Beveled balsa trailing edges, 36" lengths

3/32x3/8	3c	1/8x1/2	4c	5/32x5/8	5c
3/16x3/4	6c	7/32x3/8	7c	1/4x1	8c

Propeller Blocks

8x7/8x1-3/16 ..	6c	1-3/4	18c	18x1-3/4x2	32c
10x1x1-1/2	10c	Glider Wing Section 16x1-1/2x2	26c	9x1-1/2x2	15c
12x1x1-1/2	12c			10x2x2-1/4	25c
14x1-3/16x				3x3/16x20	18c

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COLORS 1 oz. 10c, 2 oz. 20c, 4 oz. 40c, ½ pt. 65c, pt. 95c, qt. $1.75, gal. $5.00. Red, Orange, Yellow, Green, Lt. Blue, Dk. Blue, Black, White, Brown, Olive Drab, Silver, Battleship Gray, Woodfiller, Metalic Red, Metalic Blue.

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Sept. 6. Awards will include trophies for first 3 places in gas and rubber, and a trophy and medal for first 3 in CO2 and glider events.

A U-control meet will be held at Chicago Heights by the *Strato-Cats* of Harvey on Aug. 1. Contact LeRoy Knapp Jr., 15718 Turlington Ave., Harvey, for details.

Iowa

Late news tells us that the 10th Tallcorn Model Meet has been moved and final spot is the former Naval Air Base at Ottumwa. This meet will also be the 4th District CAP Elimination Meet. This district includes North and South Dakota, Mich., Minn., Wis., Ill., Mo., Kans., Nebr., Wyo., Colo., Iowa. The dates are July 3, 4, 5 and all standard events, including Wakefield and CO2, will be run plus some surprise events. Sponsors are: Iowa Wing, Civil Air Patrol and Ottumwa City organizations. Information may be had from Harry Stanfield, Rte. 5, Ottumwa.

Hawkeye Aeroneers held a novel 25 mile Derby on May 16. Results will be awaited with interest as this is something unusual. 3 and 4 oz. gas tanks were used and a max. of 10 minutes for refueling throughout the 25 miles was allowed . . . On July 18 this club sponsors the Annual John Pavlis Memorial Meet at Municipal Airport in Cedar Rapids.

Dubuque Gas Model Assoc. is conducting an active contest season. The group is all U-control due to lack of free flight space. Results of their double-A meet on June 5 and 6 are awaited.

Hawkeye Model Air Olympics will be held in Des Moines June 26-27. All classes including radio control and jet will be flown, and many perpetual and other trophies will be awarded. Write to Hawkeye Model Air Olympics, Chamber of Commerce, Des Moines for info and entry blanks.

Kentucky

The annual U-control and free flight contest will be held at Louisville July 17-18 by *Louisville A.B.C. Model Club.* This A.M.A. meet will have separate events for Juniors, and full information may be had from Lee Pennington, Watterson Lane, Jeffersontown.

Louisiana

New Orleans Aero Club, in conjunction with the Louisiana Wing of C.A.P., have set July 17-18 as the date for their 8th Annual Gulf States Meet. Glider, rubber, free flight and U-control events are listed. Contestants from every state are invited and may obtain blanks from Whalen J. Norman, 344 Baronne St., New Orleans.

Lake Charles Aeromodeliers will run their annual U-control contest June 20 at Lake Charles, under joint sponsorship of the YMCA and Kiwanis Club. Speed, scale and stunt events are listed, as well as sport jet and scale speed categories.

Maine

The "Tale-Spinner," a new monthly paper of the *Flying Maniacs* of Augusta, has been started with Stanley Davis as Ed. News of Augusta, Portland, Lewiston, etc., will be featured.

Another interesting club monthly from this state is the Portland *Propsnappers* "Monthly Exhaust." The Feb. '48 issue contained some interesting comments from lady members of the *Propsnappers* as to why they joined up. This is "must" reading for "model plane widows." This club would like to hear from other model plane clubs and they wish to exchange club papers.

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Back on the market! For use with motors not having gas tanks. Contains new non-slosh filler. Unassembled. Pre-war price.

4-Socket Plug Wrench — **50c**

New design for easy handling. Protects cylinder fins and plug porcelain. 4 size sockets to fit all standard model spark plugs

A-C Wedge Fuel Tank

Lets fuel flow in all plane positions. Two sides and strip now soldered. "Hot" fuel metal kit, complete **75c**

Battery Boxes

4-pen cell. Positive contact.. **60c**

2-cell; three sizes—¼ oz. Penlite—⅛ oz. Medium 1" dry cells—½ oz. Large 1¼" dry cells. Each.... **40c**

Flat Pump. Blue top—28mm. for flat top cans, or Red top—27 mm. for cone shaped cans. Each.....55c

Booster Plug-In. Prevents shorting, eliminates clips. Plate and plug-in 30c

Glue Gun. Puts cement in tight corners. Handy, all metal 75c

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JET ENGINE

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The M.E.W 601 engine costs you practically nothing to build . . . a discarded CO_2 cylinder for a compression tank plus a few odd pieces of metal found in most scrap boxes. Easily and quickly built with ordinary hand tools . . . some welding necessary.

Engine runs from three to five minutes . . . uses gasoline. Easy to start . . . requires no ignition or external starting apparatus. Copyrighted plans for the M.E.W. 601 are fully illustrated and easy to follow. Complete plans, only $1.00 postpaid.

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Massachusetts

We have a request from the *Athol Gasoleers* that correspondence for this club be directed to Sec. Gordon Smith, 77 Pleasant St., Orange. The club expects to have a U-control contest this summer, date not decided at the time we went to press.

Michigan

Sky Guys of Detroit held an election in March and installed these officers: Pres. Don Lapworth; Vice Pres. Joe Dallaire; Sec. Gordon Hastings; Treas. Ed Naudzius. The officers, plus Bob Cahill, Jim Kohls and Bud Manning, comprise the Board of Directors. The club has set tentative dates for a hydro contest on Sept. 12, and a free flight gas and rubber meet Oct. 3. Watch our "Contest Calendar" for final word on these events.

Grand Rapids is certainly a modelplane conscious town, if we are to judge from the fine publicity afforded the sport by the local paper, "Grand Rapids Herald." One issue even featured a full page spread of local model builders in action. At an indoor meet held in April and sponsored by the local Exchange Club, meet mgr. Paul Kingery said over 150 fliers were entered. They even had as a special event, 30 Camp Fire Girls who flew their own models. The winners:

Solid Scale Jr.—1. Renzo Rutili; 2. Jim DeWeese; 3. Donald Fisher.

Solid Scale Sr.—1. William Palluth; 2. Jack Richason.

Solid Scale Open—1. William Alexander; 2. Lee Richason; 3. Thomas Newton.

Built Up Scale Jr.—1. John Black.

Built Up Scale Sr.—1. William Palluth; 2. Philip Langridge; 3. Kenneth Pacquette.

Built Up Scale Open.—1. Charles Mercer; 2. W. Vanderbilt.

Indoor Stick ROG Jr.—1. J. DeWeese; 2. R. Rabe; 3. J. Ormond.

Indoor Stick ROG Sr.—1. J. Carmen; 2. R. Thwaites.

Indoor Stick ROG Open—1. M. Campbell; 2. William Alexander; 3. Charles Mercer.

Indoor Stick H.L. Jr.—1. W. DeLano; 2. N. Stickland; 3. Nick Novosad.

Indoor Stick H.L. Sr.—1. W. Palluth; 2. Allan Vorel.

Indoor Stick H.L. Open—1. Robert Hoffman; 2. Charles Mercer; 3. Karl Spielmaker.

H.L. Glider Jr.—1. J. DeWeese; 2. Ed Liscomb; 3. Robert Van Kampen.

H.L. Glider Sr.—1. Kenneth Pacquette; 2. John Pequet; 3. Jack Richason.

H. L. Glider Open—1. Charles Mercer; 2. Tom Newton; 3. Robert Hoffman.

Speed Open—1. Lee Richason.

Novelty Jr.—1. Thomas Liscomb; 2.—Lionel Steller; 3. Bill Wynn.

Novelty Open—1. Lee Richason; 2. Howard Vanderbilt; 3. Karl Spielmaker.

Flying Scale Open—1. Lee Richason; 2. Charles Mercer; 3. Morris Campbell.

Flying Scale Sr.—1. Kenneth Pacquette; 2. Jack Richason.

In the rubber speed event 12 planes competed but only that of Lee Richason finished the 100 ft. course. The *Exchange Club Modelaires* conducted this event.

Minnesota

An indoor meet for 12" planes on Feb. 26 was won by the *St. Paul Modellers*. High time was 4:16.2 made by Pinkey Medved. Only two Minneapolis entrants were on hand, Paul Ring and Chuck Muth. These meets have been highly popular and large numbers of prizes are passed out to winners.

An indoor meet at Minneapolis on Feb. 29 was cleaned up by Rolland Dexter who won indoor stick (9:52.2), indoor cabin (7.36.6) and H. L. glider (0:43.9).

A Twin City control line meet on Mar. 7 showed these results:

Class C Sr.—1. Thor-Costlaw 119.; 2. Bob Green 110.0; 3. P. K. Truesdell 100.8.

Class C Jr.—1. Leonard Nalty 63.0.

Class D Sr.—1. Bob Thor 125.4; 2. Don Sektman 118.8; 3. Mel Stone 111.2.

Class D Jr.—1. Leonard Nalty 57.0.

Jet Class—1. Glenn Tempte 142.8; 2. Norm Mayeda 140.8; 3. Warner Swanson 125.4.

Missouri

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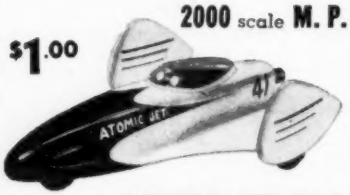

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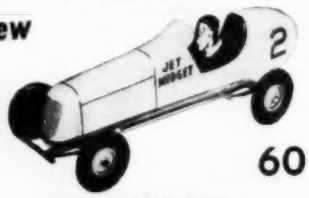

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Hobby Shop will hold a U-control contest on June 20. This AA meet will include speed, stunt and flying scale events.

New Jersey

Passaic Model Club will run the following AMA sanctioned meets in Northern N.J.:

June 13 (rain date June 20) Middle States Rubber Championships. 2 events: Rubber fuselage, C, D & E combined; Rubber stick, C, D & E combined.

July 11 (rain date July 18) Middle States F.F. Gas Championships. 2 events: Combined A and B; and C.

Aug. 8 (rain date Aug. 15) Middle States Glider Championships. 2 events: B, C, D towline; H.L. glider.

Sept. 12 (rain date Sept. 19) Middle States U-control Championships. 4 events: Class 1 & 2 speed; Class 3 & 4 speed; Class 5 & 6 speed; Stunt.

All meets will be held at the Old Delawanna Airport, River Rd. Clifton. Info may be had from contest director Al Casano, 327 Broadway, Passaic.

Flying Gremlins of Irvington will hold their annual AAA control line meet Aug. 8.

We hear from Joe Bligh of the *Atlantic City Sky Blazers* that their 2d Annual Merrill Malley Memorial Meet, scheduled for Sept. 26, will be cancelled. It is understood that the 3rd Annual Control Line Championships to be held by the *Atlantic City Cloud Chasers* will also be cancelled.

Vineland Aeronuts will hold their 9th Annual June Meet at Millville Municipal Airport, Millville. Events will be A-B-C-D Free Flight, A-B-C-D U-control and stunt. The date is June 20.

New York

Jamaica Air Birds have elected these officers: Pres. Joe Powers; Vice Pres. Bob Lamb; Sec. Jim Goeller; Treas. Donald Weaver. The club hopes to run its first annual contest in July; meantime it is conducting a campaign to enlist new members. Interested parties should contact Jim Goeller at 89-89—215 St., Queens Village, N.Y.

Date of the *Screamin Demons'* Long Island Championship meet has been changed to July 25, rain date Aug. 1. All classes of flying will be represented, but the location has not been definitely settled. Write to Wm. Johnke, 7 Meadowbrook Rd., E. Hempstead, N.Y. for info.

Patchogue Aer-O-Neers and the local *Lions Club* will hold a U-control meet at Patchogue High School grounds on July 5 (rain date July 11). There will be Class A, B, C & D speed, stunt and beauty events. A carnival and large fireworks display will be held at the same spot in the evening. Write to Jerry Block c/o Handicraft Shop, 156 W. Main St., Patchogue for details.

Westchester Aeronuts have recently reorganized and are looking forward to an expanding membership and an active flying season. Write to J. A. Tiso, 123 Fourth Ave., Mt. Vernon for details.

In connection with the International Air Exposition to be held in N. Y. City, an International Model Speed Contest will be sponsored jointly by the Mayor's Committee and the Veterans of Foreign Wars. The contest is open to Junior speed pilots under 17 years old flying internal combustion or jet powered ships. The contest will be held at Idlewild Airport. Details should be obtained from Arthur Cook, 1 East 60 St., N. Y. City.

North Carolina

The 3d Annual U-Line Meet at Salisbury Airport will be held July 4. This

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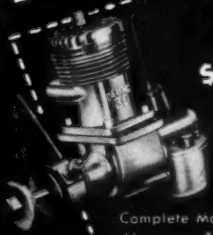

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contest will be sponsored by the *Salisbury Aeronauts* and Knights of Pythias and will include 4 speed classes, plus stunt, jet and beauty events. Prizes will run down to 5th or 6th place. Write to *Salisbury Aeronauts*, Box 49, Salisbury.

High Point Model Masters, in addition to their June 20 Free Flight meet announced last month, will hold the N.C. State Championship Rubber Powered Contest on Aug. 29 at High Point. Events are: cabin & stick rubber, CO2, towline and H.L. glider. Write to Howard Payne, Box 446 Rt. No. 1, Kernersville.

Ohio

Shelby Balsa Buzzards will hold its 3d Annual Model Meet on Sept. 19 at Bert White Farms, 2 miles east of Shelby. This free flight meet will include gas, rubber cabin & stick. This club was started 3 years ago and the present officers are: Pres. Roger Pfahler; Vice Pres. David Heck; Sec. George York; Treas. & Director Howard L. Robinson. They have one of the finest free flight sites in North Central Ohio and will soon add two U-control circles.

Warren Modelers Assoc. contest will be held at the McAllister Dairy Farm on State Road, July 25. It is sponsored by the Warren Exchange Club. Contest Director is L. H. Higelmire, Warren.

Present officers of the *Wooster Model Club* are: Pres. Harry Schlingman; Vice Pres. Herbert Strauss; Sec. Milton Long; Treas. Mike Drozda; Contest Director Jim Pugh.

Oregon

The Tri-City U-Control Meet at Medford on April 25 showed these results:

Class B Speed—1. Ray Edwards 96; 2. Jack Young 87.5; 3. Fred Hutchinson 80.

Class C Speed—1. Ray Edwards 78.

Class D Speed—1. Jack Young 126; 2.—Ray Edwards 113.5; 3. Bill Franks 111.25.

Jr. Speed—1. LeRoy Dorf 53.2; 2. Danny Kellington 49.

Stunt—1. Jerry Standefer 63; 2. Denny Jerome 50; 3. Dick White 44.

Oregon Aeromodelers Assn. was formed recently to coordinate contest dates in the area and make recommendations for rules changes. Interested clubs should contact T. D. Pomeroy at Salem.

On March 7 the *Medford Prop Nuts* beat *Grants Pass Model Club* in an intercity contest. Medford took 1st in Class B, C and D speed and also in Stunt.

Pennsylvania

First meet of the season held April 17 by *Model Wings Club* of Mount Lebanon showed these results:

Novice H.L. Glider—1. Widdy Shannon; 2. Dave Johnson.

Novice Rubber—1. Bill Haas.

Open H.L. Glider—1. Don Schwartz; 2. Jim Milligan; 3. Dick London.

Open Rubber—1. Loel Thompson; 2. Joe Stadelman; 3. John Richenbach.

Best flight of the day was by Don Schwartz whose H.L. Glider flew 300 sec. O.O.S.

Beside the "Philadelphia Bulletin" Flying Circus for Free Flight on May 31, the paper will run a control line contest on July 5 at Fairmount Park. All classes of speed stunt in Jr., Sr. and Open will be flown. A.M.A. rules will prevail; there are no entry fees or prior entry blanks, also no limitations on number of contestants.

A model club is being formed in Mayfair (Phila.) and more members, particularly with experience, are needed. Tentative name is *Flying Gremlins*, but this may be changed. Contact Richard Miller, 4509 Oakmont St., Phila. 36.

Exchange Club of Johnstown will hold a Model Plane Meet on June 27. Get in touch with G. W. Roepe, 815 Napoleon St., Johnstown for particulars.

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*Super Champion	17.50
*Ohlsson 60	11.95

Class E

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*OK Twin	49.00
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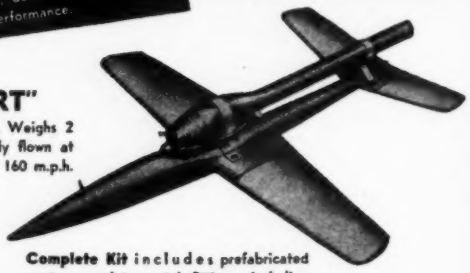

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Another *Exchange Club* meet has been A.M.A. sanctioned for June 20 at Fleetwing Airport, Bristol. This AA meet will be run in conjunction with the *Bristol Aero-Modelers*. Write Thomas Stricker, Box 228, Trevose, Bucks County, for complete info.

Further *Exchange Club* activity will take place July 5 at Meadville where a U-control and free flight meet will be staged. Details may be had from R. B. Kemper, 884 Grove St., Meadville.

Rhode Island

A new group of active modelers has been formed in Wakefield, the *Southern Rhode Island Model Craftsmen*. Officers are: Pres. Eugene Andre; Vice Pres. John Hoyle; Sec.-Treas. Clinton Sciola; Leader Frederick Hirsch. Address letters to Clinton Sciola, 9 Tucker Ave., Wakefield.

Tennessee

We hear from Ken Carter of Nashville that the Tennessee State Model Meet will be held at Smyrna Air Base on June 25-26 (rain date June 27).

The 3rd Annual Model Airplane Contest will be held in Crossville June 13. The name has been changed from Annual Upper Cumberland Meet to Volunteer State Model Airplane Championships.

Wisconsin

The American Legion Dept. of Wisconsin announces the state Model Airplane Championship Contest. Control line events will be held in Milwaukee on July 11 and include the 4 speed classes, stunt and scale. Free flight events will be held in Racine (tentative) and include gas and rubber. Write to Carl P. Wood, 112 E. North Ave., Milwaukee 12, or contact your local Legion Post for entry blanks.

Milwaukee U-Control Assoc. will stage the 2d Annual Badger State Regional U-Control Contest on Aug. 29 at Milwaukee. The National Airvets Flying Post No. 1 will join the *M.U.C.A.* in sponsoring this meet. Entry blanks from Robert E. Wood, 112 E. North Ave., Milwaukee 12.

Washington

A free flight and U-control stunt contest will be held at Walla Walla on June 27. Write to Benny Daniel, Rte. 1, Walla Walla for info.

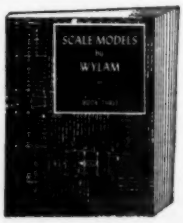
Seattle Guideliners are staging a free flight contest on June 13 and a control line contest Aug. 22. Data may be had from Ed Goldstein, 1006 First Ave. So.

Virginia

The *Veterans of Foreign Wars* will hold the 3rd Annual National Capital Model Aviation Meet at Andrews Field July 25. The C.A.P. champ will be named at this meet, to be conducted by Carl Hopkins.

Canada

The 1948 Canadian Nationals will be the Eaton Model Aircraft Contest to be held at De Havilland Airport on June 26. The *Royal Canadian Flying Clubs Assoc.*, which guides model flying in Canada, will sanction the event. Entry forms may be had from Contest Manager, T. Eaton Co. Ltd., Toronto, Ont.



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Mitsubishi S-00

(*Continued from page 41*)

top keel piece. Fair the joints with cement.

FINISHING AND DETAILS—Two coats of light blue colored dope were used on the model in the accompanying photo. This was brushed on, after slightly thinning the dope, with a good quality art brush. Gray, gray-green, or a combination of gray, green and blue may be used. Friends have told me of tangling with all-white *Float Zeros* during winter months of Aleutian Island fighting. Therefore the choice of a suitable color scheme is variable.

The flying prop is, of necessity, a bit on the short side, so a square tipped version was tried by the author with fine results. Carve in the usual manner from hard balsa to the dimensions and outline shown on Plate 1. Give this prop a good "dish" on the back side; sand fairly thin but leave the tips blunt. Brush on several coats of clear dope, sanding between each coat. Fit the prop with the usual nose plug and shaft and washers. Fit the prop in place after threading 4 (5 if your model weighs over 1-1/2 oz.) loops (8 strands) of well lubricated brown rubber 1/8" flat through the fuselage. A small piece of rubber tubing over the shaft hook will prolong the life of the motor. Anchor the rubber motor in place at the rear with the motor dowel.

No, we haven't forgotten the cockpit canopy. This is best made by carving from balsa a dummy canopy to shape. Then mold the plastic canopy to shape by following the directions given on the instructions coming with any one of several molding liquids now on the market. Or, if you desire, the canopy can be built up of small pieces of celluloid. A molded canopy, though, is neater and really a much simpler matter.

Insignia will complete the model. The red wing circles of the defunct "Rising Sun" did not show up well against the color scheme. The sunburst design shown on the original model was *sometimes* seen on Japanese aircraft. The "PU" was an afterthought of the author.

FLYING—It is strongly suggested that testing be carried out in a field covered by tall grass. Glide Mitsubishi S-00 from the shoulder. Correct diving or stalling tendencies with molding clay attached to the nose if model stalls, or to the tail if model dives.

When correct balance is achieved, try a short powered flight over this tall grass. Once the ship is trimmed for flight it is well to weigh out an amount of lead solder equal to the clay. The solder occupies less space and can be concealed. It is likely that your model will be a bit tail heavy; the author's model was. If so, the weight may be concealed by cutting away a bit of the float tip covering (on top); cement the weight within, and replace the covering and the clear and colored dope. Total model equaled 1-1/2 oz.

R.O.W. flights are well within the capabilities of this model. Use a winder and pack in the turns. Correctly balanced, your little "Mitsu" will get off the water with a good burst of speed. Not a duration model by any means, she'll still make a couple of hundred feet. This job glides nicely and is very stable.

You're on your own now, and don't forget to send in a photo of your model. This model is a beauty, so Good Luck!

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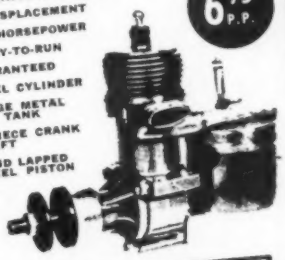

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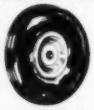

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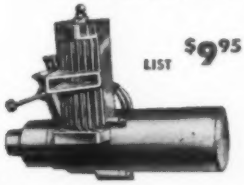

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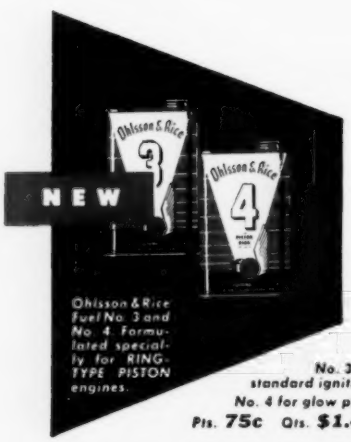

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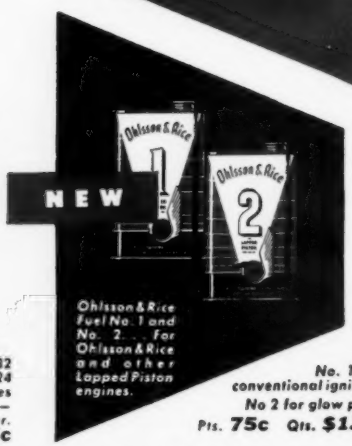

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